

THE Soybean Digest



Official Publication

OF

THE AMERICAN SOYBEAN ASSOCIATION

VOLUME 5 • NUMBER 10



AUGUST • 1945

FROM THE MAY 1944 SOYBEAN DIGEST

"WE ASKED MR. CRAW SOME QUESTIONS--"

After Mr. Craw's letter appeared in the May issue of this magazine, we wrote and asked for further information about his experiences with inoculation. Read his interesting reply below.

In our files are scores of letters from farmers who have seen proof of the effectiveness of **NITRAGIN**. They believe, like Mr. Craw, that "good inoculation is just as important as the seed."

1,040,000 acres, 12 percent
year ago, but a 58,000-acre decline
last month.

The Ohio committee estimate is close
the goal of 1,500,000 with 1,480,000 acres,
an 11 percent advance over 1943.

— s b d —

COMMENT

I have been getting *The Soybean Digest* for some time, and it is a big help to the farmer who raises beans. The pictures in the *Digest* of inoculants don't seem like they could be true. But if a farmer will only try them out, he will find that they invariably give the same results on his farm.

My experience with soybeans is that good inoculation is just as important as the seed."

CARL F. CRAW
Muncie, Ind., R. 1

Dear Sir:

I have been using Nitragin, like it very much, and get good results. We use a four year rotation of crops, and it would be a question if the bacteria would carry over. I use the twenty-five bushel size can, and for 10¢ per bushel you can't take a chance on not inoculating.

Two years ago, I put a field in beans, which never had beans in before, I planted two rows in the field and did not inoculate them. These rows left without inoculation did not make as good growth as the other beans. They turned yellow in late summer and yield was lower. The two rows could be told all summer by the big difference in looks.

Yours truly,

Carl F. Craw
Muncie, Ind. R. 1



THE NITRAGIN COMPANY, INC., 3872 N. BOOTH ST., MILWAUKEE, WISCONSIN

THE Soybean Digest

REG. U. S. PAT. OFF.

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Publishers' Representatives: Ewing Hutchison Co., Chicago

Vol. 5

AUGUST ★ 1945

No. 10

Published on the 15th of each month at Hudson, Iowa, by the American Soybean Association. Entered as second class matter November 20, 1940, at the postoffice at Hudson, Iowa, under the Act of March 3, 1879. Forms close on 1st of month. Subscription price to association members, \$1.00 per year; to non-members, \$1.50 per year; Canada, \$2.00; other foreign, \$2.50.

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The American Soybean Association

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AUGUST, 1945

How to Use Spergon with Legume Inoculants On Soy Bean Seed

Repeated tests have indicated the high value of Spergon in preventing seed decay and increasing emergence, especially in a cold wet planting season.

Tests also show that Spergon is compatible with legume inoculants and that you may obtain double benefits by treating seed with Spergon and with bacterial cultures. Here's how it's done:

1. First treat seed with Spergon. The recommended rate is two ounces per bushel. Your state experiment station will advise dosages to meet special local conditions.
2. Inoculate only with strong cultures containing viable bacteria and apply excess amounts over that recommended for untreated seed.
3. Use just enough water to make culture cling to seed.
4. Plant within two hours after inoculating.

Write us for further information about the use of Spergon to increase soy bean stands and yield, and for copy of Soybean bulletin.

Advantages of Spergon

- Protects seed against decay caused by soil-borne and seed-surface fungi.
- Safe to use. Non-irritating and non-injurious to the operator when applying it to seed.
- Long lasting. Spergon does not deteriorate with age. May be applied months in advance of planting.
- Self-lubricating. No graphite needed in planter.

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Directors to Hold Over

Meetings during a period of transportation congestion such as the present pose problems. But the board of directors of the American Soybean Association in deciding not to hold the customary annual convention in September found itself also faced with problems, such as how to transact Association business which is normally taken care of during the convention.

Chief of such business is the annual election of officers. This matter has been taken care of for the time being through the consent of all officers and directors to hold over until a convention can be arranged and an election held, Secretary J. M. Strayer reports. No definite plans can be made for the convention until ODT travel restrictions are removed, of course.

Reports on the activities of the Association and its business affairs will be brought to our readers as usual in the September issue of the *Soybean Digest*.

Since there will be no convention for a free exchange of information the annual issues in September will be more important than ever as a means of contact.

Just in
Passing

Seeming adversity is sometimes a blessing in disguise. The boll weevil introduced diversified farming to the South and the soybean to Louisiana. W. M. Scott was one of the early soybean growers in that state. When most farmers went back to cotton he stuck with soybeans and has been growing them for 37 years . . . There is considerable interest in growing soybeans in California but so far results in most sections have been disappointing. The search for adapted varieties that will grow under the varied conditions of California's soil and climate continues . . . C. B. Bender of the New Jersey Agricultural Experiment Station tells about soybean silage in this issue. Shortage of protein concentrates in New England has interested some farmers in that section in soybeans for forage and silage . . . The crop has been making good progress through much of the soybean belt. But in some localities it was planted too late to have much chance of maturing seed . . . Delsoy Topping is another interesting all-vegetable product that is trying through a legal maze to find a way to market.

is being used to full satisfaction by many soybean and other vegetable oil mills.

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REAL VICTORY FOR SOY FLOUR



Soy flour at long last has been included among the permitted binders in the manufacture of sausage.

This action by the meat inspection division of the Livestock and Meats Branch, U. S. Department of Agriculture, marks another milestone in the forward march of the soybean.

Under date of July 6, Meat Inspection Division Memorandum No. 74 was issued and reads in part as follows:

"Sausage may contain not more than 3½ percent, individually or collectively, of cereal, vegetable starch, starchy vegetable flour, soya flour, dried milk or dried skim milk. When such ingredients are added to sausage, the product shall bear the name of each of such added ingredients as, for example: 'Cereal Added,' 'Potato Flour Added,' 'Cereal and Potato Flour Added,' 'Soya Flour Added,' 'Cereal and Soya Flour Added,' 'Dried Skim Milk Added,' etc., as the case may be. The marking and labeling of sausage containing such added ingredients shall be in accordance with the requirements of parts 266 and 267 of the Meat Inspection Regulations of March 24, 1945."

For nearly 10 years the soybean industry had sought futilely to gain recognition for soy flour as a designated binder of sausage on the same basis as other permissible binders. Denial had been based principally on the argument that because the protein of soy flour was so much like the protein of meat a test had not been evolved which would accurately determine the quantitative content of soy in sausage. Time and again it had been argued by advocates of soy flour that tests did exist which were as accurate or more accurate than those used on other binder ingredients.

Dr. G. E. Totten, former chief of the meat inspection division, now retired, had remained adamant, citing numerous reasons why soy should not be used, all of which have since been scientifically disproved. Meantime not only the growers of soybeans but their congressmen from the Cornbelt states were becoming more restive and demanding that scientific facts and not bureaucratic prejudice be the determining factor.

Last fall a new start was made with BAI. The entire presentation, which included a very comprehensive brief, was made by Edward J. Dies, president of the Soy Flour Association, and president of the National Soybean Processors Association. This brief attached letters from scores of packers testifying to the high merit of soy flour as a binder and requested that it be permitted under the regulation.

Dr. A. R. Miller, now chief of the meat inspection branch, comparatively young and forward looking and

highly regarded throughout agriculture, personally directed the study, assigning specific tasks to various committees of scientists in the division.

One by one the objections were eliminated on the basis of findings of the government experts. It was developed incidentally that the largest packers also have been substantial users of soy flour in some products over a period of years and at least one of them has been a manufacturer of soy flour.

During the studies which covered 9 months, all agitation from growers, congressmen and others ceased and Mr. Dies acted as sole contact with BAI and worked directly with Dr. Miller. Thus each phase of the problem was given thorough and deliberate analysis without confusion or interference. The result was the order extending to soy its proper recognition.

President Howard L. Roach of the American Soybean Association has given assurance of full and continued cooperation with BAI.

A similar situation prevails at the Food and Drug Administration, which has failed to include soy flour as an optional ingredient in permanent bread standards in amounts not exceeding 3 percent. For the past 3 years growers and their Cornbelt members of Congress as well as the soybean industry in general, have been watching developments in this situation. Since the retirement because of age of Walter G. Campbell, commissioner, a more realistic viewpoint is reported to have prevailed in the department under his able successor, P. B. Dunbar, and C. W. Crawford, assistant, who are in charge of this matter. It was decided not to hold further hearings on bread standards during the war period. But new steps are anticipated immediately after V-J Day.

Under the drive of federal governmental officials soybean growers have expanded acreage and increased production almost beyond the dreams of War Food officials. The soybean has helped fill the immense gap in the fats and oils situation and has provided the lion's share of protein in livestock and poultry feeding during prosecution of the war.

Soybean growers are determined that their product, so highly endorsed by government officials and leading food scientists, during time of war, shall have its rightful place in the postwar period.

The Bureau of Animal Industry is to be congratulated for its exhaustive studies and its sound conclusions.

PROCESSING PLANTS*

Considerations in Determining Size, Type and Location

By J. H. SHOLLENBERGER

Commodity Development Division

and W. H. GOSS

Engineering and Development Division
Northern Regional Research Laboratory,
Peoria, Illinois.

HERE are very few published data on the costs of installing and operating soybean processing mills, and the best sources of such information are the manufacturers of equipment used in the process. It is usually a simple matter to determine the probable costs of raw materials and the yields and prices of the finished products for any chosen locality, but the operating expenses vary considerably, depending upon the type of process, size of installation, continuity of operations, and other factors. Typical yields and values of the products obtained per bushel of soybeans at a typical expeller type mill in 1943-44 were as follows:

Quantity and value of products from one bushel of soybeans:	
Oil—8.87 lbs. at 11½ cents	\$1.042
Meal—47.37 lbs. at 2½ cents	1.066
Total value of products	\$2.108
Cost of one bushel of soybeans delivered and stored at plant	1.880
Operating margin per bushel	\$0.228

The approximately 23 cents per bushel "spread" between prices of raw materials and products would have to cover all operating expenses, overhead, and profits. The amount of this "spread" is normally subject to market conditions, and for several years prior to World War II, it fluctuated between 14 and 20 cents per bushel for typical expeller type mills located in the heart of the soybean producing area. World War II conditions resulted in the establishing of controlled markets, and the soybean industry operating under government contracts, with prices adjusted to allow each mill a fixed operating margin. The data just presented should therefore be considered only as an example of usual soybean milling yields, for the reason that purchase prices of the soybeans may be adjusted to provide the operating margin to which a given mill is entitled.

The approximate operating margins allowed various soybean mills under the 1943-44 government contract provided some measure of comparison between various types



Unloading soybeans from a freight car at a Decatur, Ill., processing plant.

of mills. The schedule classified plants three ways according to type and three ways according to size as follows:

Operating margin allowed cents per bushel	
Solvent type:	
Large	29
Medium	30
Small	31
Expeller and screw press types:	
Large	24
Medium	26
Small	28
Hydraulic press type:	
Large	29
Medium	30
Small	31

Small mills are those under 3,000 bushels per day, medium mills are 3,000 to 6,000 bushels per day, and large mills are over 6,000 bushels per day.

An analysis of the bare operating costs in solvent and expeller type soybean mills is given by Bilbe 1/2, who quotes 9.2 cents per bushel in a 120-ton solvent mill and 8.5 cents in an expeller or screw press plant of comparable size. These figures, which of course do not include administrative and sales expense, profit, and certain other minor items of overhead, are based upon utility and labor prices of that date. The article in question should be consulted for a more detailed explanation of the cost analysis, for the data presented can readily be altered appropriately to obtain estimates of operating costs in mills of different sizes than those described, for comparative purposes. Although the solvent system may appear

slightly more expensive to install and operate, the apparently higher initial cost and operating expense are usually more than compensated for by the extra yield of oil realized in the extraction process.

A complete study of operating costs in mills of various sizes reveals that it is much cheaper to crush soybeans in large plants than in small ones. The principal items contributing to higher unit operating costs in small plants are wages and overhead of all types. The so-called fixed charges, such as taxes, insurance, depreciation, etc., are particularly high on a cost-per-bushel basis if the mill operates only part of the year. It is for this reason that, in the larger plants, every effort is made to keep the plant running for practically 12 months of the year. Shut-downs are costly and should be avoided if it is at all possible.

SIZE OF PLANT

No general statement can be made in regard to the smallest size soybean mill that is practicable, for the answer to this question varies from location in accordance with many economic factors, several of which will presently be discussed. In most cases, but not always, it is necessary to have available a supply of soybeans sufficient to assure nearly year-around operation. The quantity depends, of course, upon the size of the plant.

The one-expeller type of mill has proved perfectly satisfactory in many locations for small scale operation. Crushing about 20 tons of soybeans per day, it would require approximately 200,000 bushels to operate for 300 days. In the industry, there are expeller type plants of all sizes, ranging in capacity from 500 to 30,000 bushels per day; but one having four to eight expellers or screw presses and crushing 2,500 to 5,000 bushels per day is considered by many to be typical. Mills of this size are located rather generally throughout the soybean belt.

Much has been written and spoken in favor of the ultra-small soybean processing installation, which can be installed in one's barn, and also of some of the slightly larger versions, operated to serve a small community. A great deal can be said both in favor of and against such operations, but prior to the time when the government assumed control of the soybean processing industry as a war-time measure, not one had proved

^{1/2}From Soybeans: Certain Agronomic, Physical, Chemical, Economic, and Industrial Aspects, U. S. Department of Agriculture publication AIC-74.

1/Bilbe, C. W. Continuous Solvent Extraction of Vegetable Oils. *Mech. Eng.* 357-60 (1941) Cott. and Cott. Oil Press. (12), A-8, A-9, A-12 (1941).

itself successful by independently operating for any extended period in direct competition with larger mills.

It is true that freight savings allow a greater margin for processing expenses in the 5-ton or 10-ton plant which operates only in the local market, as compared with a larger mill which ships raw materials and products considerable distances. It is also true that unavoidable items of overhead expense in the small mill greatly increase the processing cost, per bushel, over that which would be obtained if larger equipment were used.

SCREW PRESSES

Expellers and screw presses designed for soybeans are not made commercially with capacities less than 15 or 20 tons per day, and this size has proved quite satisfactory under some conditions. Most efforts to develop 5-ton and 10-ton plans have consequently been devoted to solvent extraction, and the principal difficulty encountered is that the only cheap solvents available are similar to gasoline and are hazardous to use. In large extraction plants extreme measures are taken to minimize explosion hazards, and it requires technically trained personnel to maintain the requisite standards of safety. The extremely small mill can hardly afford to retain a staff with the training necessary to avoid accidents and to maintain the operating conditions in equipment as complex as solvent extractors.

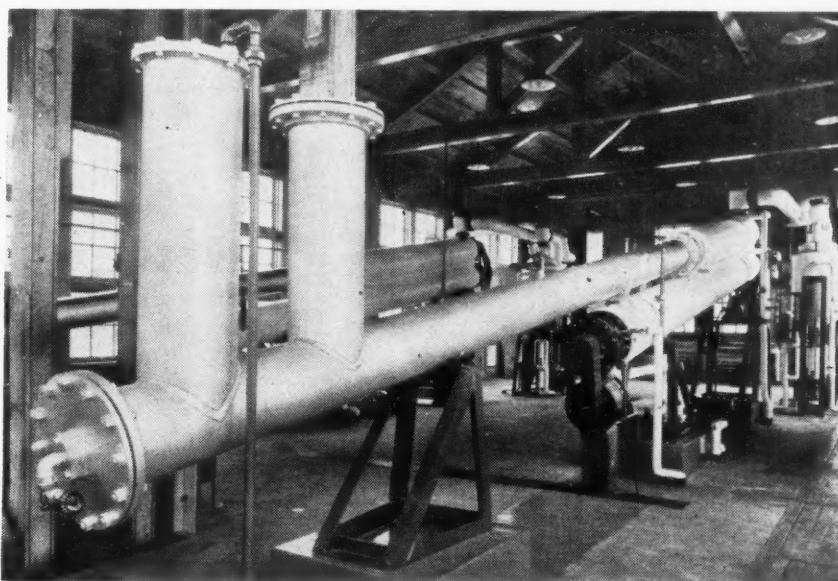
During the past 10 or more years, the Ford Motor Co. has experimented with small-scale soybean processing and has operated two small plants to demonstrate the method developed by their research staff. However, in spite of considerable publicity and a number of attempts of others to use such a process on a small scale, the Ford installations are still the only ones of their type in operation. Moreover, the Ford Motor Co. has subsequently built and is operating a considerably larger soybean mill which has been used, at least until the United States became involved in World War II for supplying oil for varnishes and other materials entering into the manufacture of the Ford automobile.

A final answer to this question, i.e., the feasibility of using extremely small solvent units, may be forthcoming as the result of the recent placing on the market of 5-ton and 10-ton extractors designed for use of a fireproof solvent, trichloroethylene. This solvent is about five to six times more expensive than the hexane used in larger solvent mills, and it has never before been employed on a large scale by the soybean industry. One manufacturer who developed such apparatus has recently installed one rated at 10 tons of soybeans per day, and at least three others are being built by other firms. No estimates are yet available on the unit cost of operation, as compared with the one-expeller mill, but the results obtained in these initial installations will

be watched with great interest by those who have studied the question of milling soybeans on a small scale.

In considering the economic aspects of a soybean processing business — for example, one that is still in the blue-print stage — one must realize that small-scale and seasonal operations can hardly be avoided in many marginal areas where the volume of soybeans available is limited. The result of part time operations is obviously higher unit operating

that might normally be employed to ship the beans from the point of origin to the ultimate destination of the meal. Under these conditions, the soybeans are milled in transit, that is, the oil is removed during a brief stopover at the mills. This, obviously, represents a saving in freight over milling operations in which the outbound products move to market on a new freight billing independent of the freight billing of the inbound raw material.



Interior of one of the Ford Motor Co.'s soybean extraction plants.

costs, but these are frequently compensated for by favorable marketing conditions and other factors. The former require further explanation, but as an example of the latter there might be cited the instances in which certain mills, located somewhat distantly from the main producing areas, have crushed soybeans part of the year and linseed or other oilseeds the remainder of the season.

MILLING-IN-TRANSIT PRIVILEGE

In order to understand fully the factors which must be considered when evaluating the optimum size and location of a soybean mill, it is necessary to make a distinction between so-called "local" and "transit" processing operations. Some mills confine their activities largely to one or the other type of operation, and many carry on both.

Local operations are those in which the beans are purchased from growers in the immediate vicinity and the meal is sold to local feeders. There are usually no freight charges on the soybeans or the finished meal or, in any case, these charges are small.

Transit milling is based upon the "milling-in-transit" privileges extended to processors in cases where the raw materials, shipped from some distant point, are unloaded at the plant, milled, and the resulting meal shipped to some ultimate destination further along the same route used to bring the raw material to the mill. In other words, the plant is located on the transportation route

Railroads operate under a very complex system of milling-in-transit schedules, and all soybean mills engaging in transit milling require the services of a traffic expert to assist the soybean buyer and meal salesman in arranging purchases and sales to take advantage of available "through billing" regulations.

Some localities are much more advantageously situated than others with respect to transit rates between soybean producing areas and the meal markets. For example, Decatur, Illinois, is in a particularly strategic location, with respect to soybeans and soybean oil meal, and it is for this reason that Decatur has by far the largest concentration of soybean processing facilities in the United States and that all sales of soybean products are normally made on an f.o.b. Decatur basis.

Because of the centralization of the soybean industry in Decatur and the consequently large volume of transit movement to and from that city, the prices of soybeans from more distant sections have, in years past, been determined largely by the transit freight rates required in order to deliver the raw material to Decatur at the market prices being paid there. Similarly, meal prices were generally determined by the transit freight rates that must be paid in order to ship meal from Decatur to destination points. In many cases, soybean prices were computed on the basis of the Chicago price less applicable freight, but meal prices were practically always the prevailing Decatur

quotation plus freight.

Under the preceding conditions, it is apparent that, although a very small mill or one doing a seasonable business could hardly hope to survive if located near Decatur, those small plants situated in more remote areas enjoyed freight rate advantages which largely offset their higher operating cost. It is also obvious that the mills located some distance from Decatur could ordinarily realize a greater processing margin on that portion of their crush conducted on entirely local soybeans, as compared with that portion conducted on a transit basis. These factors require very careful consideration by anyone contemplating embarking on a soybean processing venture.

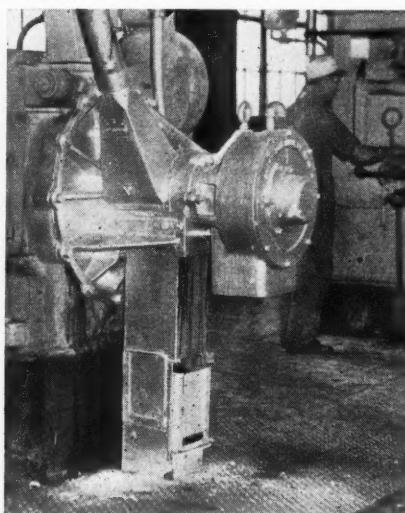
There is at least one other way in which transit rates sometimes benefit processors located in certain areas distant from the soybean belt. Whether or not "through billing" is available on the soybeans milled, shipment of the oil takes a considerable higher freight rate than that applicable to the beans and meal. It is therefore frequently an advantage to be located near the oil markets so that a substantial saving can be made in the cost of transporting the oil.

At the present time (1944-45) the freight advantages, formerly accruing in many outlying areas by virtue of the industry's centralization in Decatur, are more or less in abeyance because fairly uniform soybean and soybean oil meal prices have been established as part of the war-time soybean program. It would be expected, nevertheless, that the practice of applying freight discounts and premiums, based on Decatur, would re-establish itself when war-time marketing restrictions are relaxed. Many new mills have been constructed since the government assumed control of the industry, however, and a considerable portion of the Iowa crop that was formerly shipped to Decatur for milling in transit may be crushed in these districts in the future. It is therefore hazardous to make any prediction regarding the exact role which the "Decatur basis" of determining prices will play in the post-war soybean industry.

OTHER ECONOMIC FACTORS

Another practice of the soybean industry, and one that needs little explanation, is that of hedging all purchases and sales. Processors buy most of their beans and sell most of their oil and meal for future delivery, and contracts are generally negotiated in accordance with trading rules adopted by the National Soybean Processors Association, 3818 Board of Trade Building, Chicago 4, Illinois. As in all agricultural processing industries, gambling on the markets tempts disaster. It is the usual custom to sell oil and meal corresponding to every car of beans purchased, or vice versa, at prevailing prices. Operating on this basis, the processor knows exactly what processing margin he will have on every bushel he processes. Obviously, if prevailing future

prices for soybeans, oil meal, and oil do not afford a processing margin commensurate with his expected yields and operating costs, a processor stays out of the market and awaits a price change that will enable him to do business at a profit. It is sometimes the case, however, that on account of overhead costs, an operator considers it preferable to run at a slight loss rather than to shut down his plant.



Interior of expeller plant.

The preceding are only a few of the many factors that require thorough investigation in connection with choice of size and location of a soybean processing plant, but they are among the most important ones. The proximity of other mills which would compete for raw materials and for meal markets is likewise a vital consideration.

A word of caution here might be in order for those who contemplate soybean processing as a prospective new business venture but who have not had oil milling experience. Oilseed processing, particularly the operation of expellers, screw presses, and solvent extractors, is a highly technical field which requires the services of well-trained and experienced operators. No fixed rules can be given for conducting many steps in the processes, and it is necessary to rely entirely upon the operator's judgment, based on experience, in order to maintain proper conditions to yield marketable products with a minimum of conversion cost. The services of a reliable firm of consulting engineers with a background of oil milling experience would be an excellent investment for anyone not thoroughly familiar with the field who expects to engage in any type of soybean processing.

— s b d —

William J. Leary, former extension agronomist at the North Dakota Agricultural college at Fargo, has joined the agronomy staff of Northrup, King & Co., Minneapolis seed and feed firm.

PUBLICATIONS OF U.S.D.A.

List of Available Publications of the U. S. Department of Agriculture recently issued by the Office of Information includes the following publications on soybeans and related subjects:

- 10 AWI. Soybeans for oil.
- 71 AWI. Save weather-damaged soybeans.
- 92 AWI. Soil conservation aids soybean production.
- 5 BAE-Ext. Soybean oil and the war.
- 7 BAE-Ext. Soybeans go to war.
- 629 C. Soybean and Korean lespedeza hays.
- 1520 F. Soybeans: culture and varieties.
- 1605 F. Soybean hay and seed production.
- 1617 F. Soybean utilization.
- 1937 F. Soybean diseases and their control.
- 534 MP. Soybeans and soybean products as food.
- 748 T. Rapid determination of soybean oil content and of iodine number of soybean oil.
- 787 T. Influence of varieties, element, and fertility level on the chemical composition of soybean seed.
- 12 L. The striped blister beetle on soybeans. 5c.
- 75 SAS. Statistics of oilseeds, fats, and oils (1943).
- 35 AWI. 9 steps in grading soybeans.
- 59 S. Fats, oils and oleaginous raw materials, production, prices, trade disappearance.
- 73 AWI. Cooking with soya flour and grits.
- 166 L. Soybeans for the table. 5c.

Publications may be obtained from Division of Publications, Office of Information, U. S. Department of Agriculture, Washington 25, D. C. The Department asks that requests be limited to publications of primary interest.

— s b d —

GUNDERSON IS RESEARCH HEAD

Establishment of a department of research and product development of Pillsbury Mills with Dr. Frank L. Gunderson, executive secretary of the food and nutrition board of the National Research Council, as vice president in charge is announced by Philip W. Pillsbury, president.

Dr. Gunderson will headquartered at the Pillsbury general offices in Minneapolis. He will continue to contribute occasional services to the food and nutrition board on a consulting basis.

Since shortly after Pearl Harbor he has been affiliated with the scientific advisory services of the Research Council and the National Academy of Sciences.

Pillsbury also announced that C. G. Harrel, director of the company's research department, will continue in that post upon his return from Europe where he is on a special military mission for the Quartermaster Corps.



This field of Ogdens yielded 40 bushels per acre.

IN 1908 AND IN 1945

SOYBEANS TO THE *RESCUE*

• *One of the South's old soybean men harvested his first crop with a cane knife.*

My interest in soybeans started in 1908 when the cotton boll weevil first made its appearance in this territory in its invasion east and north across the Cottonbelt. Like most farmers I had to look to other crops, with a resulting change in my farming operations.

I went to oats and lespedeza hay, corn and soybeans, cattle and hogs. This reduced my cotton acreage about half.

Naturally, this was a drastic change. It took several years to accomplish as I, like most farmers in those days, had a mortgage to pay in addition to operating on borrowed money, so I had to feel my way and pay as I went.

I had planted soybeans long enough to know their value as a soil building crop, and had found them better than peas. So I increased my soybean acreage, planting some broadcast for hay, and some in rows to be harvested for seed (when I could find a farmer foolish enough to plant it) and to save seed for my own planting. I followed my broadcast beans with oats, and the row crop beans with cotton or corn.

As the years went on more people became interested, among them our local cotton oil mill, so in 1910 I harvested enough Mammoth Yellow soybeans for the oil mill to crush and get a tank of oil. They in turn gave me the oil meal which was fed to cattle, hogs and a small amount to mules.

Since this was before the day of any type of harvester, that I knew of at any rate, I harvested these beans by cutting them



Ralsoys in full bloom July 15, 1944.

with a cane knife and beat them over a small mesh wire stretched across a wagon bed. Primitive, yes, but we got the beans. At that time labor was plentiful and cheap. I believe it was in 1912 that I bought a row harvester that beat the beans off the stalk as you drove the team along, an awkward, ungainly thing, but an improvement on the wagon. Next I got a pea and bean thresher, but it was not very successful as there was too much handling of the beans, and by the time you got them to the thresher most of the beans were already shattered off.

When quick maturing varieties of cotton were developed and methods of poisoning found practical, most farmers went back to cotton, but still believing that the day would come when the soybean would have its place on our farms, I stayed with the soybean and never did plant more than 50 percent of my cultivated land in cotton even though my production was in excess of a bale per acre.

By W. M. SCOTT

Tallulah, Louisiana

Again we are faced with a serious problem, the shortage of labor on the farms of the country, and again I think it is "the soybean to the rescue." Its value as a money crop is established. It works in with mechanized farming and minimum labor requirements.

I have 30 families on the plantation where normally I have 85 to 100, and my cotton acreage has been cut to 350 acres from my AAA allotment of 650 acres due to the loss of labor. I am planting 750 acres of soybeans in rows to harvest this year. We are cultivating with four-row tractor equipment and of course will combine them.

I have found that at present the Ogdens, Ralsoys and Macoupin give the best succession and best results of any of the varieties that I have tried yet for early maturing beans. They start maturing September 1, first Macoupins which yield around 20 bushels, then the Ogdens which yield from 30 to 45 bushels, then in 10 days or two weeks the Ralsoys with approximately the same yield as the Ogdens. My average yield for the past five years has been a little over 30 bushels per acre.

In my test plots I am trying some later maturing soybeans that will mature around November 1 after I have finished harvesting my other varieties.

Growing Soybeans in CALIFORNIA

THE SOYBEAN has been widely extolled as a product of great economic value and many industrial uses. Probably for this reason, farmers are interested in its possibilities for California. Numerous varieties have been tested, many of them in several localities; but seldom have the yields been high enough to be profitable.

Many plantings have been made here by farmers, and occasionally very good yields have been reported. Since, however, no California farmer has continued to grow the crop, evidently the yield has never been high enough year after year to justify continued production.

VARIED SOIL AND CLIMATE

In a state with such varied soil and climatic conditions as California, one might reasonably suppose that there would be localities where the soybean would do well. According to limited tests carried on in various locations some years ago, such areas do exist. On the bottom lands along the lower Sacramento River, yields approached 2,500 pounds per acre. In Sonoma County, on unirrigated land, a few varieties yielded over a ton of seed per acre. Elsewhere, too, especially in valleys near the coast, similar results could doubtless be obtained. Whether yields of this magnitude would continue year after year, even in these more favored localities, could be determined only by extended trials. But most of these areas will also grow other crops, such as beans, sugar beets, or vegetables, which will produce a larger financial return per acre, and with which the soybean could not compete.

Although yields of seed in the general farming areas have been unsatisfactory, the soybean does have a definite place in our agriculture as forage and as a soil-improvement crop. With irrigation it will produce a good vegetative growth in most sections of the state. Its principal use as forage is in the form of hay. Properly handled it makes an excellent hay, highly palatable, with a protein content varying from 14 to over 17 percent. It provides a good substitute for alfalfa and may be fitted into a short rotation or used to provide a high-protein feed, especially in times of scarcity. The more vigorous varieties will yield 2½ to 3 tons per acre under normal conditions.

Soybeans are summer annuals, with a strictly determinate growth. That is, when the plant attains a definite size according to environment, it reaches maturity and dies. In this respect it differs from the cowpea, whose vegetative parts will remain green and

continue to grow until killed by frost, even though the seed may have ripened. In the East, the soybean is sometimes grown with corn to be hogged off in the fall. But in California, because of its determinate growth and because the leaves drop off and the seed shatters badly when mature, it is less valuable for this purpose than the cowpea.

EDIBLE SOYS

Lately there has also been some interest in edible soybeans, both for the market and for the home table. Although their production is limited by the same conditions as affect the oil varieties, with care one can raise enough to be a valuable addition to the family garden. In the more favorable locations production for market should also offer at least limited possibilities.

Most of the soybean varieties are erect and bushy, with a well-defined central stem branching more or less from the base. Some of the early-maturing plants are short and bushy; but in many of the late plants the central stem is tall and slender, sometimes almost viny and 5 feet or more in height. Usually, though not always, the early varieties are short and bushy, the later ones taller and more slender.

In an arid climate with low humidity and high temperature, such as prevails in most parts of California, the ripe pods shatter easily; and most of the lower pods will therefore disperse their seed before the upper pods are ripe.

"Look, Dad, pork and beans!"

—Successful Farming.



By B. A. MADSON

Professor of Agronomy and Agronomist in the Experiment Station, Berkeley, Calif.

• *Reports from California are not too encouraging but soybeans can be grown in some sections.*

The seed varies greatly in size. The color may range from almost white to black; straw yellow, olive green, and green are common. Seed color and size are varietal characteristics.

WHAT VARIETIES?

More than 100 soybean varieties have been grown experimentally in California. Although none of the varieties tried here have consistently yielded enough seed to be profitable, some have been more consistent in their seed production than others. Some also show decidedly superior character for forage.

For seed production alone, early or mid-season varieties should be used, for only these are likely to reach full maturity. The more promising tested are Manchu, Illini, Harbesoy, Minsoy, Scioto, Virginia, and Laredo. The first five are midseason varieties and, when planted in April or early May, will reach maturity in September. The Virginia and Laredo require a longer growing period; they produce a more vigorous vegetative growth, but often also a fair seed crop. The seeds of Laredo are usually somewhat lower in oil than those of the other varieties.

For forage purposes the slender-stemmed, luxuriantly growing plants will ordinarily produce the highest yields. Of the varieties mentioned, Virginia, Laredo, and Manchu are the best, though any vigorous midseason variety may be used.

Experience with edible soybeans in California is insufficient to justify definite conclusions regarding the comparative yield or quality of varieties. Experience in the Central States indicates, however, that the following varieties are of superior quality, especially as a green vegetable. Most of them may also be used dry. Giant Green is the earliest; Bansei and Kanro are early; Hokkaido, Jogun, and Willomi midseason; and Imperial, Higan, and Roskuson late. Most of the edible varieties shatter much more readily when mature than do the oil types, so that good yields of seed will probably be even more difficult to obtain, except in especially favorable localities.

CLIMATIC AND SOIL REQUIREMENTS

For its best development the soybean needs a moderate, even temperature, with a fair amount of humidity. Since it requires about the same conditions as Indian corn, its greatest production has been in the northern part of the Cottonbelt and the southern

part of the Cornbelt. In recent years early varieties have been obtained, which mature satisfactorily in the northern tier of states. Southward in the Cottonbelt—that is, along the Gulf Coast—soybeans seldom develop normally. Although a good vegetative growth is usually obtained, the pods often fail to fill well, and the yield of seed is low. The same is true in the warmer parts of the Southwest, including the larger valleys of California. In these areas the yield is nearly always low, and often the crop is a complete failure.

In California, besides the unfavorable climate, attacks by the red spider undoubtedly contribute to the low yield. The relative effect of climate and of red spider has not been determined.

Soybeans will grow on almost any soil, though the best growth will usually be obtained on deep, fertile, sandy loams or clay loams. Under California conditions they are less tolerant of drouth than are cowpeas. In the warmer valleys, irrigation is necessary to bring the crop through to maturity.

Where temperatures are moderate and the soil is of good moisture-holding capacity, irrigation is not essential. Some years ago test plantings in Sonoma County, the Salinas Valley, and the lower Sacramento Delta did very well without irrigation. There are probably many limited areas where similar results could be obtained.

CULTURE IN CALIFORNIA

Soybean culture is essentially the same as the culture of any other bean. Since the crop is planted in the spring, it requires a well-prepared seedbed, with moisture enough at the planting depth to assure germination. If the land has been plowed in the fall or winter, and the rain has been sufficient to pack the surface, the seedbed can usually be prepared with surface-tillage implements, such as the disk and harrow. Spring-plowed land will require more careful preparation. Sometimes a preirrigation, after plowing, may be necessary to secure a good seedbed.

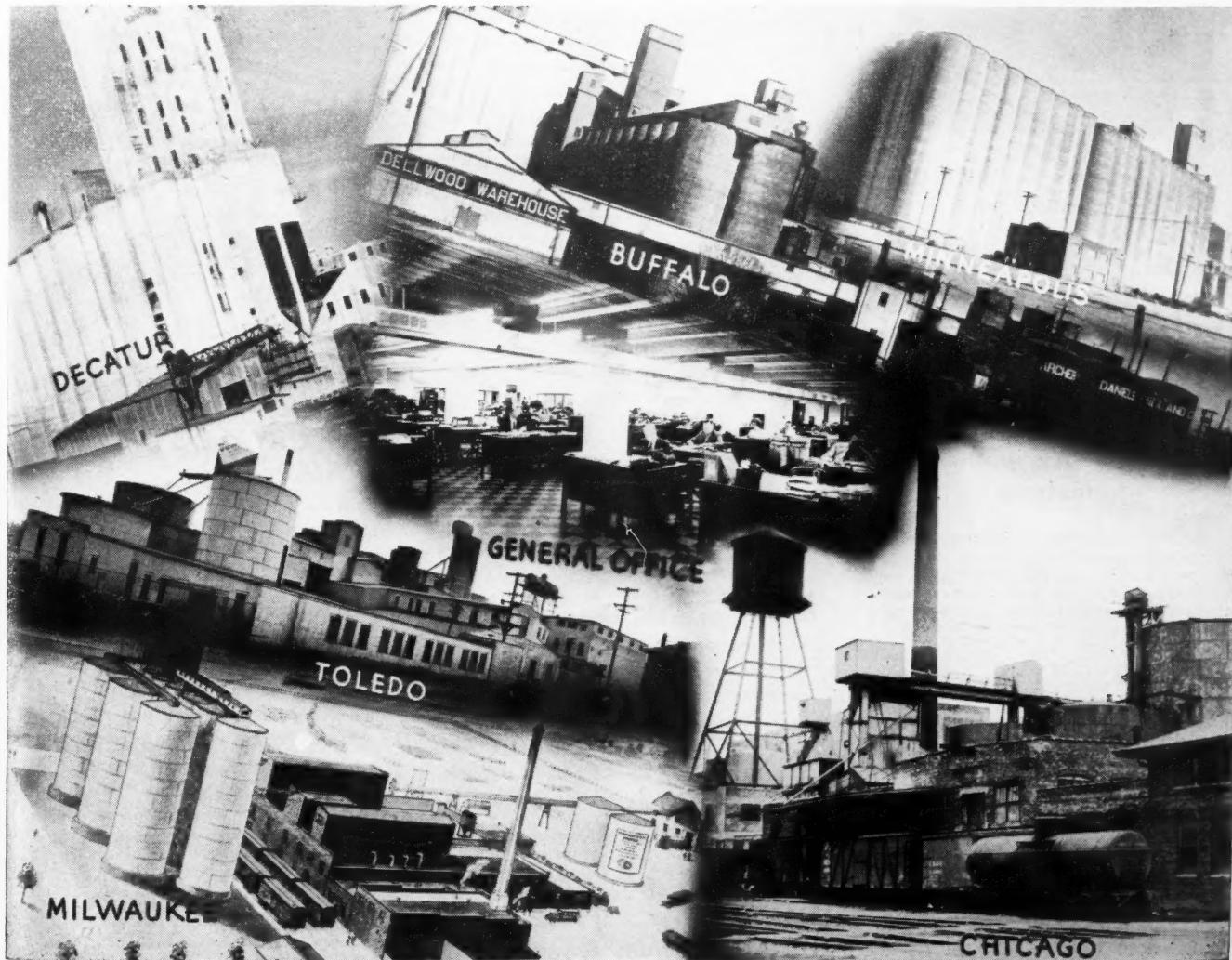
Soybeans tolerate low temperatures and

cold soil somewhat better than common beans and can therefore, in most sections, be planted 10 to 14 days earlier. As a rule, however, one should wait until the soil is fairly warm before planting, in order to insure a good stand. As with most summer crops, if the planting is too early, much of the seed is liable to rot. In the warmer sections the earliest date for planting soybeans lies between April 1 and April 15. In the cooler sections planting should be delayed until about May 1. Planting may be postponed or continued up to July, so that the soybeans may serve as a secondary crop, especially for forage. Experimentally the attempt was made to plant late enough to throw the blossoming period after the season of high temperatures, in order to obtain a better set of seed. The attempt, however, was not successful. If the seed was planted late enough to encourage a better filling of the pods, it failed to ripen before the growth was checked by cold weather.

Although soybeans are usually reported as more drouth resistant than many summer

SOYBEAN PLANTS OF ARCHER - DANIELS - MIDLAND CO.

This unique composite photo shows the six Archer-Daniels-Midland Co. soybean oil mills and a section of the Minneapolis home office. The firm has a record of 106 years of service to the vegetable oil, feed and processed food industries. The biological research and development laboratory, one of the country's largest, is under the able direction of Dr. J. W. Hayward, well known for his work on the nutritive value of soybean oil meal.



legumes, they are not sufficiently so to grow well or to reach maturity without irrigation in the warmer sections of California. Some water must be artificially provided. Usually two to three irrigations, the latter being given about the time the pods start to form, will be sufficient. When the crop is being grown for forage, one can obtain the maximum yield only by watering often enough to keep the plants always in a lush condition. Experience has also shown that red-spider damage is likely to be less severe on a crop provided with ample moisture than on a crop that lacks water.

On river-bottom soils, or in certain valleys near the coast where temperatures are more

moderate, a crop can be grown without irrigation; but even in some of these areas better yields, especially of forage, will be obtained if some water can be applied.

HARVESTING THE CROP

Since shattering is usually severe in our arid climate, one should cut while the crop is still somewhat green and cure it in rather large cocks before threshing. Cutting with a windrower, or with a mower that has a windrowing attachment, is probably best. As soon as cut, the beans should be put into rather large cocks, allowed to dry, and then threshed in the usual manner.

For hay purposes, soybeans may be cut from the time the pods begin to form until the pods begin to mature, but before the leaves fall. Hay mowed at the earlier stage will have a protein content of 16 to 18 percent. At the later stage the protein content will probably be below 15 percent, though the total yield of hay will be somewhat increased. When the crop is badly attacked by red-spider, as often happens in California, one may have to harvest rather early, even at the expense of yield. In any case, the plants should be cut before shedding their leaves.

The hay crop can be cut with an ordinary mower equipped with a windrowing attachment. Since in a heavy crop the growth may be somewhat tangled, a vetch bar will work better than a regular mower bar. The mower bar will do as well, however, if the dividing board is replaced with a metal runner, which will enable the sickle to cut the growth free. After being mowed, the hay should be left in the windrow only long enough to wilt. It should then be placed in cocks to complete the curing.

When the edible soybean is raised as a green vegetable, its pods are ready for picking as soon as they start to change color. From any one planting the picking period is usually only about two weeks; after this the pods and seeds become too tough.

The ripe, edible soybeans are harvested exactly like the seed crops of other varieties. Since the edibles shatter more easily, they should be harvested at the earliest possible moment, and handled carefully and quickly.

ENEMIES

The soybean, like other crops, is subject to various diseases and pests. In California its three most serious enemies at present are rabbits, red-spider, and nematodes.

Of all our field crops, soybeans appear to be the favored food plant of the jack rabbit. On large fields a considerable area around the edges may be eaten, and a campaign of rabbit extermination may be necessary. A small planting may be completely destroyed as fast as the plants come up. Here the best protection is a fence of chicken wire, which need not be substantially constructed nor be over two feet high. If the fence remains in

place until the plants are well established and have several permanent leaves, the period of danger will be past.

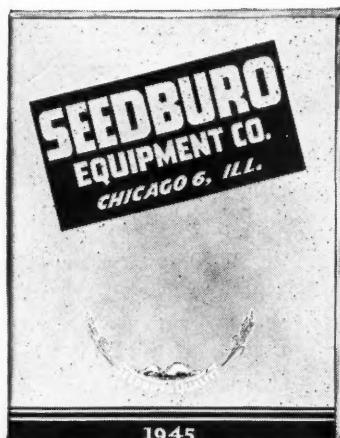
Red-spider is nearly always present on soybeans grown in California. Often the attack is severe enough to defoliate the plants before the pods are set, and the result is an almost complete seed failure. This pest is probably one reason for the low yields commonly obtained. It can be controlled by repeated dusting with sulfur; but such treatment is too expensive for field plantings, and is feasible only for small gardens.

When soybeans are being grown for hay, the crop should be cut before the leaves start to dry up and drop, even though the plants may not yet have reached their optimum stage of growth.

Soybeans are susceptible to nematodes and should not be planted on land badly infested with this pest. The only exception is the variety Laredo, which is somewhat resistant and can be grown for forage if the infestation is not too severe.

Of the many other diseases and insects that attack soybeans, the majority have not yet caused much trouble in California. If, however, our soybean production is increased to any extent, new problems will probably arise in some areas.

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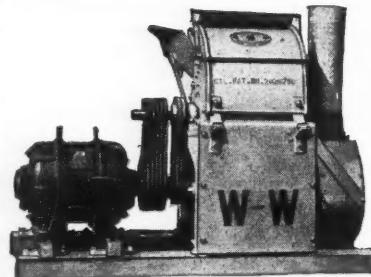
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SOYBEAN OIL MEAL IN *Poultry* FEEDING

● *Third of a series of eight special articles by well-known nutrition authorities on feeding livestock and poultry.*

By J. E. HUNTER

Member Soybean Research Council

DURING the global war, soybean oil meal has come into its own as an ingredient in poultry feeds and has performed both a nutritional and a patriotic service.

Before the advent of World War II, soybean oil meal was considered a good protein ingredient in poultry feeds but was not being used to its greatest possible extent. Extensive quantities of animal protein products, such as dried milk, fish meal, meat scraps, and liver meal, were available, and soybean oil meal was used to supply the remaining necessary protein after liberal amounts of animal protein products had been incor-

porated in poultry feed formulas.

Today the picture has been reversed, and soybean oil meal is recognized as a primary source of high-quality protein. The poultry industry has been called upon to supply tremendous quantities of poultry meat and countless dozens of eggs to feed the fighting men of our own forces and our allies, as well as our civilian population. The poultry industry has done such an outstanding job of production, that it has not been necessary to ration poultry or eggs. Production goals set up for poultry and eggs have been met and exceeded, which would not have been possible without ample supplies of high-quality protein in the form of soybean oil meal.

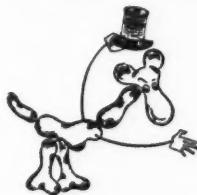
Poultry of all kinds, for high production

efficiency, have high requirements for proteins, minerals, and vitamins. Poultry can be kept alive by indifferent feeding; but if they are to produce economically and make a profit for their owners, they must be supplied with all the nutrients that they require in adequate amounts. The jungle fowl lived on the food she obtained by foraging and laid only a few eggs per year. Her descendants, however, have been bred to lay large numbers of eggs and to produce throughout the year; but for the present day hen to produce to her genetic capacity, she must be supplied with an adequate nutrition. Soybean oil meal has helped to supply her with this nutrition.

During the war, because of shortages of animal proteins, soybean oil meal has been widely and, in most instances, intelligently used in compounding feeds for poultry. This has been possible because of the great wealth of good scientific information that has been available for its use, accumulated by public research agencies, both state and federal, and by private laboratories. During this period in which soybean oil meal has been used so widely as an ingredient in poultry feeds, results have been excellent. Hatchability of eggs and egg production has been as good as ever before. Growth and livability, also, have been exceptionally good. This fine performance during wartime is a testimonial to the good work of nutritional scientists that has paved the way to adequate

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diets for poultry even in the face of scarcity of many commonly used ingredients.

Soybean oil meal has been highly praised by many as a source of protein of excellent quality for chickens, turkeys, ducks and other poultry. This praise has been well founded, but some people in their praise of soybean oil meal have been so enthusiastic about its virtues that they have forgotten its shortcomings.

Not so many years ago difficulties were encountered when attempts were made to replace animal protein concentrates with soybean oil meal pound per pound or on an equivalent protein basis. Some investigators neglected to replace the vitamins and minerals lost when animal proteins were omitted. *Soybean oil meal is an excellent protein source but is not a rich source of minerals and vitamins, and, when used effectively, must be used along with other sources of minerals and vitamins in such amount that fulfill the requirements of poultry for these factors. It would be unfair to soybean oil meal to say that it does not contain vitamins and minerals, as it contains several important minerals and vitamins in significant amounts but not in such quantities as to supply the requirements of poultry.* Soybean oil meal can best be used in feeds when complete information is at hand concerning the requirements of poultry for the various nutritional factors.

COMPLETE PROTEIN?

What about the completeness of soybean protein? Proteins are made up of simpler organic compounds known as amino acids, about 10 of which are indispensable to poultry. Does soybean meal contain all of the essential amino acids? It does, and in this respect is like dried milk. One amino acid in soybean oil meal, known as methionine, however, is not present in large enough amounts to do the best job of nutrition if soybean oil meal is to be used as the sole source of protein in the poultry diet. Because of the fact that soybean oil meal does not contain large quantities of methionine, it will function best when used along with some high-quality animal protein, as good animal protein contains more methionine than does soybean oil meal. Dried milk and fish meal are especially good protein supplements to use with soybean oil meal to insure the nutritional adequacy of the total protein of the diet.

Milk and fish meal are excellent sources of water soluble vitamins and help make diets containing soybean oil meal adequate in this respect. The careful maker of feeds, with the knowledge of the requirements of poultry for all the known factors and of the protein, vitamin, and mineral make-up of the ingredients to be used, can compound diets that are completely adequate nutritionally.

Soybean oil meal is used today in all types of diets for poultry. To find a poultry mash not containing soybean oil meal is the exception rather than the rule. It is widely

used in high-quality feeds for chickens, turkeys, ducks, and other kinds of poultry. It is used in feeds for growing, laying, and breeding stock.

Many producers of soybeans on the farm have wondered if they cannot effectively use ground soybeans for feeding poultry. Ground soybeans contain more fat than poultry can use effectively; and, also, the quality of protein in raw soybeans is vastly inferior

to properly processed soybean oil meal. The heat treatment that accompanies processing is beneficial in improving the value of the protein.

With all its virtues, soybean oil meal is not a high-priced protein, and the intelligent usage of this versatile product in poultry feeds has done much to supply nutritionally adequate feeds to poultrymen at costs that have made poultry production profitable.



A load of soybeans being picked up in field.

Soybeans for Silage

By C. B. BENDER

Professor of Dairy Husbandry,
New Jersey Agricultural Experiment Station

The soybean has become increasingly popular in our farming system. Because it is an annual it can be used as a catch crop or part of a planned rotation. It is high in protein and is frequently planted for hay in place of alfalfa under certain conditions. Because of the coarseness of the stems it is quite difficult to cure as hay; however, excellent silage can be made from this plant if the proper precautions are followed.

Soybeans as ensilage is not a new use for this popular legume. As early as 1919 Eckles of Missouri tried to ensile this plant but found it to be more difficult than most crops to preserve properly. Other investigators in 1924 tried ensiling the soybeans alone and in combination with sudan grass and observed that the combination made better silage. Since then soybeans were ensiled with sorghum, corn or millet with success. Evidently these crops furnish sufficient carbohydrates to preserve the soybeans.

In 1935 Elting preserved soybeans by using molasses and found the silage quite palatable to the dairy cow. Bechdel in his work with soybean silage concluded that the ensiling of the soybeans is preferable to curing the crop for hay. Other investigators reported no difference between the feeding value of soybean hay and soybean silage.

Good soybean silage should be free from obnoxious odors and when ensiled alone

should be handled in the following manner for best results:

1. *Immature soybeans should be allowed to wilt slightly and then ensiled with 100 pounds of molasses or 250 pounds of corn meal or corn and cob meal per ton of green material.*
2. *Mature beans, i.e., when the beans have filled the pods, but before leaves are lost from the bottom of the plants, will make excellent silage when preserved with 80 pounds of molasses or 200 pounds of corn and cob meal.*

In 1943 the N. J. Agricultural Experiment Station studied the comparison of molasses-soybean silage and corn meal-soybean silage as feeds for the milking cow. The feeding values, apparent digestibility, metabolizable energy, protein and mineral metabolism of these silages were carefully evaluated.

The results of this study showed that milking cows fed both the molasses-soybean silage and corn meal-soybean silage showed excellent calcium and phosphorus retention but the protein of the soybean silage was not quite adequate for the needs of the animals.

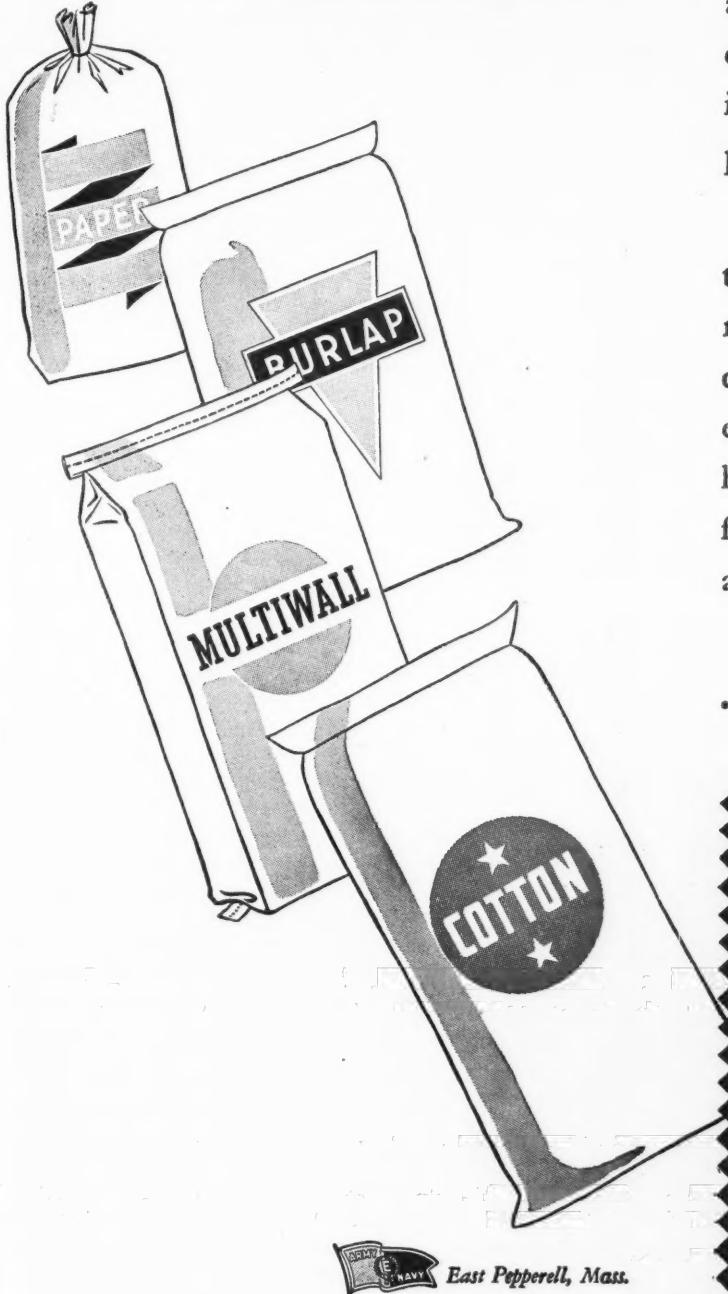
Both methods of preservation resulted in very good soybean silage and were found to be as valuable as corn silage in the rations of milking cows.

The molasses-soybean silage was less digestible and contained less metabolizable energy when fed to milking cows as the sole feed than when fed as part of a complete ration.



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188 Million Bushel Crop Forecast

The 1945 national soybean crop may come very close to equaling that of 1944 according to the forecasts of the U. S. crop reporting board and *Soybean Digest* correspondents.

The U. S. Department of Agriculture report for August indicates a national average yield per acre of 18.1 bushels compared with 18.4 for 1944 on a slightly larger acreage. The forecast is for a crop of 188,284,000 bushels compared with 193 million bushels in 1934 and 1944.

However, there is substantial opinion that the 1945 yield prospects equals that of 1944, now believed to have been overestimated and to be due for revision.

Reports indicate that the late planted acreage will be subject to frost damage. Many areas, especially in southern Illinois, where plantings were delayed for a

month, are exceptionally late. However, indicated yield in Ohio, Indiana and Missouri is larger than last year. The 12 million bushel yield in Missouri if it materializes will be the largest on record.

The following yield of soybeans for harvest in leading states is indicated: Illinois 67,716,000; Indiana 24,030,000; Iowa 37,680,000; Missouri 12,950,000; and Ohio 24,969,000.

August 1 reports of *Digest* correspondents follow:

ARKANSAS

Tildon Easley, extension agronomist, Little Rock: Planting date about 1 month late on average with more late planted beans than usual. Considerable acreage for hay, some for pasture, very small amount with corn or sorghum for silage.

Jacob Hartz, Stuttgart, for east central: Many beans planted in July. Yield outlook not as good 1944 year unless plenty of moisture in next week or 10 days. No disease or pests. Estimate acreage about same as last year on yellow and green mill varieties, slightly larger on hay or forage varieties.

CONNECTICUT

J. S. Owens, professor of agronomy, Storrs: Maturity late. Yield outlook good. Moisture excessive. Occasional Mexican bean beetle infestation. 100% for hay or silage.

ILLINOIS

Russell S. Davis, Clayton, for west central: Yield outlook below 1944. Crop off to very late start. Must have very favorable weather from now on for even fair yield. Many fields show thin, weedy stand. May and June too wet. July too dry. Many fields hard, deep crusted. Grasshoppers in considerable numbers in borders, meadows and pastures. 10% for hay or silage if crop matures, more if early frost. 70% would be caught by early frost.

Walter W. McLaughlin, Decatur for Decatur and vicinity: Maturity 2 weeks late. Yield outlook not too bright, especially for later beans. Very dry. Late beans seem to be growing very slow. Early planted beans fair prospect. 25% would be caught by early frost.

J. E. Johnson, Champaign, for Champaign and adjoining counties: Maturity 102%. Yield outlook excellent. Moisture conditions very good for the present but rain needed in many sections. Very small acreage seeded late in water damaged spots would be caught by early frost. Less than usual amount of disease and pests present. Some grape colapsis earlier. None now with recovery being made on damaged plants. Farmers comment beans even more promising than last year. Fields that will be grassy represent a very small percent. Some farmers as usual believed they didn't have time to plant their beans in rows and now are much disappointed. As usual promise themselves this will never happen again. Width of row and mechanical equipment still a matter of discussion. As yet do not find the "perfect" soybean plow. Planting equipment very good, but this cannot be said of the average soybean plow. We need more dual purpose equipment in our crop production. High fertility showing its real value this year. Some few farmers using fertilizer. As yet not enough definite information to warrant as general practice other than we know that limed and phosphated land where sweet clover is grown is paying dividends. Plant breeders are hopeful of producing higher yielding, higher oil content soybean varieties. From my experience on many farms believe a better use



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of the knowledge we have is more important from the grower's standpoint while the plant breeder is working on his part of the program. We have much to learn even from the progress made.

A. J. Surratt, Illinois agricultural statistician, Springfield: Maturity near average to month late. Diseases and pests about as usual or light. Crop prospect has improved to near average. Condition well above average for bulk of crop in northern half, but below average due to very late planting of fully half of acreage in southern half. Soybeans made wonderful growth generally in July, particularly on three-fourths of state acreage planted for all purposes by or before June 26. Advancement for much of this part of the crop is up to average for August 1 and with average weather should mature by average frost dates. The later quarter of the total acreage is largely in southern half and up western border through Hancock and western McDonough Counties in northern half of Illinois. Very doubtful if this late crop can escape varying frost damage unless fall frosts hold off later than usual. Recent weather hot. Larger part of Illinois becoming rather dry at close of July.

INDIANA

J. B. Edmondson, Clayton, for south central: Soybeans blooming for 2 weeks. Probably 7-10 days late. Yield outlook fair to good. Still seasonably short by 6-8 inches but growing fast. Moisture conditions ideal. Rains have come exactly right after a slow, cold, wet planting season. 15% would be caught by early frost if too much moisture and prolonged growth follows. No diseases or pests showing up yet. A good clean seed bed with hot sunny weather finally coming with ample moisture have worked miracles in past 3 weeks. Prospects much brighter than month ago.

K. E. Beeson, Indiana Corn Growers Association, Lafayette: Maturity later than normal. Moisture conditions above optimum. No diseases or pests yet. July 1 official acreage 96% of 1944 acreage. Due to an abundance of wet weather and delayed planting, soys all sizes in this state. Many plantings 6 inches high August 1. All growing vigorously at this writing and so are weeds. Larger soys in blossom. Many fields fine prospects and many of necessity will come into blossom with very short growth, and consequently relatively low yield prospects.

IOWA

O. N. La Follette, Feed Institute of Iowa, Des Moines: Development in various stages, from 10 days to month late. Too early for yield prediction but expect lower than 1944. Beans not suffering for moisture. September 20 frost would catch most of crop. Disease evident in limited areas but not serious.

Albert J. Loveland, State AAA, Des Moines: Maturity 10 days late. Yield outlook 90% of last year. Moisture good. 15% would be caught by early frost. No diseases or pests. 1% or less for hay or silage. If frost holds off until average frost date, beans harvested for grain will exceed last year. We are learning more about producing soybeans and are using better adapted varieties.

KANSAS

E. A. Cleavinger, extension service Kansas State College, Manhattan for east: Maturity southeast 10-15 days late, northeast 15-25 days late. Yield outlook good. With continued rains and late frost yield

per acre will be above average. Moisture conditions excellent. 40-60% would be caught by early frost. Very small acreage of hay varieties planted.

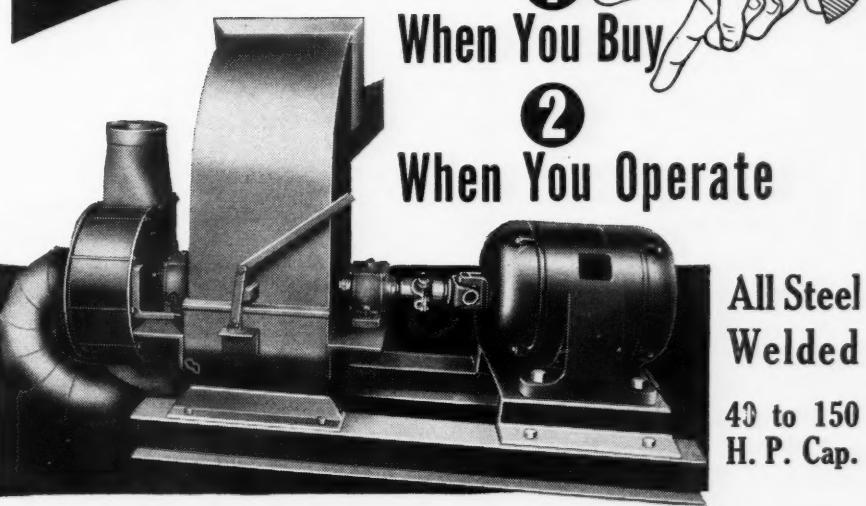
MICHIGAN

A. A. Johnson, Farm Crops Department, Michigan State College, East Lansing: Maturity 2 weeks late. Yield outlook fair to good. Moisture conditions ample. 50% would be caught by early frost. Percentage for hay or silage higher than normal.

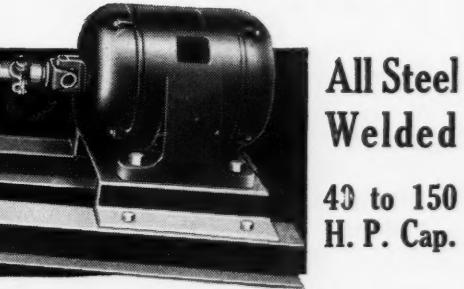
MINNESOTA

N. C. Bieter, Farmer Seed & Nursery Co., Faribault for central and southern: Maturity 2-3 weeks late. Too much rain, 4-5 inches lately. 90-95% would be caught

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Welded
40 to 150
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MYERS-SHERMAN CO., 1407 12th St., Streator, Ill.

by early frost. Last year Richlands, the latest variety we raise, planted June 30 made ripe dry seed. But we had no killing frost till October. We can expect frost to hold off to that date about 1 year in 7.

Paul H. Kirk, Agricultural statistician in charge, St. Paul: Indications now point to quite an improvement in growth. Prospects have improved.

John W. Evans, Montevideo, for southwest central: Maturity 90% normal. Beans beginning to blossom. Yield outlook and moisture conditions good. 25% would be caught by early frost.

MISSISSIPPI

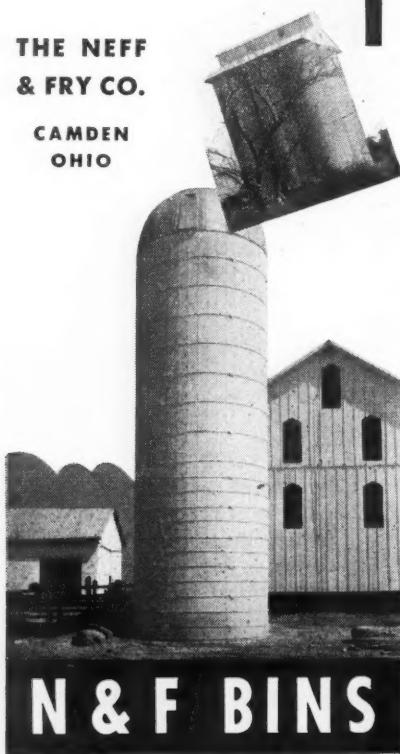
L. S. Stoner, Holly Bluff, for Yazoo

CUT COST CORNERS

Adequate storage plus fast, efficient handling of soybeans is the one sure way to cut costs and raise profit figures. Hundreds of N & F bins are being installed for that reason. Trained crews erect N & F bins in any size . . . stave or monolithic. Bins are guaranteed. Write for engineering service and catalog.

THE NEFF
& FRY CO.

CAMDEN
OHIO



County: Maturity some late. Yield outlook and moisture conditions good. No diseases or pests. 10% for hay.

MISSOURI

J. Ross Fleetwood, extension specialist, Columbia: Maturity late as a whole with many fields very late. Yield probably under past 4 year average. Moisture conditions somewhat spotted but generally satisfactory. 20% would be caught by early frost. Grasshoppers in certain areas. 20% for hay or silage.

NEBRASKA

A. E. Anderson, agricultural statistician in charge, Lincoln: Most counties in this area have very small acreage, but few like Dodge and nearby counties carry some of larger acreages, probably due to location of crushers at Fremont, Omaha and Lincoln. State estimate 26,000 acres compared to 30,000 in 1944 and 25,000 for 1934-43 average. May be some soybeans planted to replace corn not included in estimates. Splendid soil moisture supply and so far do not anticipate material damage from frost, except possibly to very late planting. Maturity about up to normal and yield outlook very good. Soybeans will be harvested for grain unless yields far below expectations.

Marr Processing Co., Fremont, for east central: Maturity 2-3 weeks late. Yield outlook good. Moisture conditions excellent. 75% would be caught by early frost. We have large acreages of late planted soybeans, all of Richland variety.

J. C. Swinbank, College of Agriculture, Lincoln: Most fields later than normal. Too early to tell about yield outlook. Beans now growing rapidly. No diseases or pests of any consequence reported. Many growers in southeast Nebraska were unable to get beans planted because of wet weather. Acreage of early maturing varieties greatly increased in vicinity of Fremont where corn planting not possible at normal dates. Weeds may be troublesome in some fields as continued wet weather has interfered with cultivation.

NORTH DAKOTA

B. E. Groom, Greater North Dakota Association, Fargo: Crop coming on very fast though slow starting because of wet weather. At present very promising. Practically all would be caught by early frost. Moisture conditions never better. 400 farmers, land owners and farm managers here Monday July 23 for field day at College Station. Crowd visited soybean plots which looked exceptionally fine. Of those present several spoke of fine fields of beans in their communities. Colleges testing out many varieties. Kadolt appears earliest.

OHIO

D. F. Beard, department of agronomy, Columbus: Maturity slightly later on aver-

age. Some very late fields. Yield outlook good. Moisture conditions excellent now. Too wet earlier. 10-15% would be caught by early frost. 5-10% for hay.

G. G. McIlroy, Irwin, for central: Maturity normal. Yield outlook and moisture conditions good. 10% would be caught by early frost. Diseases or pests not noticeable at present time. Acreage may be some smaller than 1944.

D. G. Wing, Mechanicsburg, for west central: Maturity late in spots but rains are making beans catch up. Yield outlook above last year when we had bad drought. 20% would be caught by early October frost. Our 430 acres of beans above last year. Lincoln fields look good.

RHODE ISLAND

R. S. Shaw, Rhode Island State College, Kingston: Soybean acreage not important here. Those grown are for forage only, with some small acreage for green manure. Maturity normal and yield outlook good. From recent observation no pests or diseases seen.

VIRGINIA

W. W. Lewis, assistant agronomist, Blacksburg: Maturity normal. Yield outlook good. Moisture conditions above normal for soybean producing area. No diseases or pests heard of. Estimate 10% for hay or silage. We have had a fine season in Virginia and soybeans are looking good. A few fields have been damaged by floods.

WISCONSIN

John P. Dries, Saukville, for southeastern lake shore region: Maturity 10 days late. Yield outlook fair depending on good fall weather to help mature. Moisture condition very good. 90% would be caught by early frost. Row planting being stressed and farmers beginning to plant in rows.

— s b d —

LIKES ARTICLE ON COTTONSEED

To the Editor:

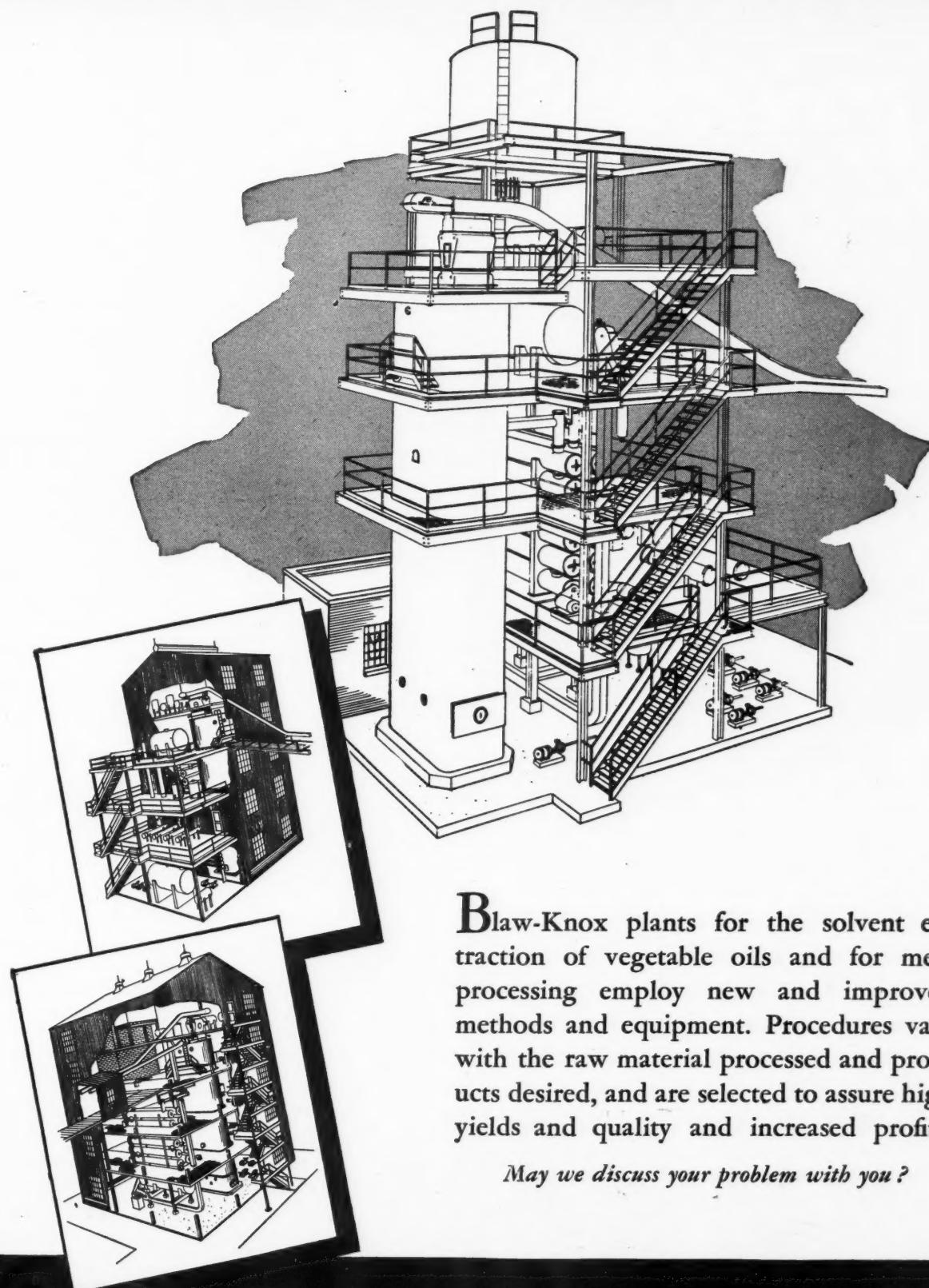
We would like to have three extra copies of your May 1945 issue or three reprints of the article on "Cottonseed." We found this most interesting and would like to have others in our organization, who are located in other cities, read the article.

I note that you are going to run a series of this type of articles; and if they are as interesting as the one on cottonseed, we would like to have reprints of the succeeding articles also.

JOHN H. GILLEN,
Director Linseed Oil Division
Pittsburgh Plate Glass Co.
Pittsburgh, Pa.

Several more articles on competing oilseeds are in the making and we hope to publish them in coming months. Mr. Ward's article on Cottonseed has occasioned much favorable comment.—Editor.

FOR MORE PROFITABLE EXTRACTION OF VEGETABLE OILS



Blaw-Knox plants for the solvent extraction of vegetable oils and for meal processing employ new and improved methods and equipment. Procedures vary with the raw material processed and products desired, and are selected to assure high yields and quality and increased profits.

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GRITS and FLAKES...

FROM THE WORLD OF SOY

With the July issue, *Oil & Soap* has enlarged its abstract section to include a section on drying oils, which will be edited by the staff of the Northern Regional Research Laboratory. One of the July features was an article, "Oil Quality from Hydraulic Pressed Soybeans," by R. P. Hutchins of the Procter & Gamble Co.

* * * *

Dr. Norman J. Volk, head of the department of agronomy at Purdue University, has been appointed associate director of the experiment station, succeeding W. V. Lambert, now with the Agricultural Research Administration in Washington.

* * * *

W. A. Berge assumed the management of Mankato Soybean Products, Inc., Mankato, Minn., August 1. He succeeded Frank Bergman who will continue his affiliation with the firm in an advisory capacity.

* * * *

John Tadano is erecting a plant for the production of soy sauce at Glendale, Ariz., where he has had the product on the market since 1941. Capacity of the expanded plant, one of the largest in the country, is expected to be 3,500 gallons monthly.

* * * *

June issue of *Kansas Business Magazine* contains a well illustrated article on "Soybean Processing." The article lists the eight Kansas soybean processing plants, the annual soybean acreage in the state for the past 15 years, and contains much interesting information about Kansas soybean history.

* * * *

A. F. Leathers, manager of the Swift & Co. soybean mill at Des Moines, was host to the Polk County Grain Dealers Association at a chicken dinner at Bondurant, Iowa, recently.

* * * *

Processors building new elevators to increase storage capacity: Soy Bean Processing Co., Waterloo, Iowa, 600,000 bu.; Hemphill Soy Products Co., Hemphill, Mo., 200,000 bu.; Emporia Soybean Mills, Inc., Emporia, Kans., 250,000 bu.; Quincy Soy Products Co., Quincy, Ill., 200,000 bu.

* * * *

Dwight M. Dannen of Dannen Milling Co., St. Joseph, Mo., is now a second lieutenant in the Stewards Department of the Army, stationed at Fort Mason, Calif. Dwight is inspecting boats carrying Army men and supplies, and checking food supplies before voyages are started.

* * * *

Hargrove Industries, Inc., Jonesboro, Ark., plan to construct a soybean processing and cottonseed oil mill. Estimated cost is set at \$150,000.

* * * *

Emergency priorities have been issued by WPB for reconstruction of the processing plant of Galesburg Soy Products Co., Galesburg, Ill., which was destroyed by fire June 16, reports Max Albert, manager. Operations are expected to be resumed by December.

* * * *

Harold J. Buist has been elected chairman of the board and president of Allied Mills, Inc., to succeed the late John B. De Haven. Mr. Buist has been with the company since it was founded in 1929, and executive vice president and treasurer since 1941.

NATION FACES SERIOUS FEED SHORTAGE

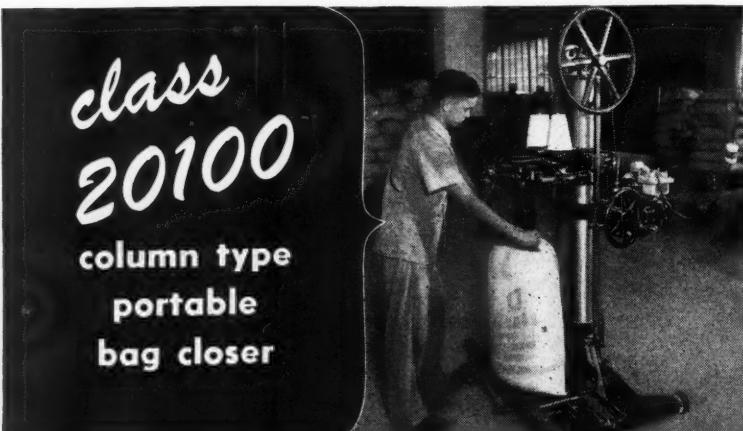
The nation is facing another feed shortage which may be more serious than the shortage two years ago, it was brought out at an emergency meeting of the Feed Industry Council and the feed survey committee held at Chicago, June 20-21.

The meeting of the council and college consultants was called as a result of the acute situation in connection with corn and substitute grains. Members of the survey committee reported that while most farmers are still able to get the feed they need there is an acute shortage in commercial channels and some feed manufacturers are already using open market wheat for feed.

Although unfavorable weather conditions have been a contributing factor, it was pointed out that re-expansion of livestock numbers and increased rate of feeding coupled with a lack of box cars have intensified the situation. To make matters worse there is a general food shortage throughout the country of such items as meat, milk, poultry and eggs. With favorable price ratios many farmers are planning increased production of livestock and poultry with consequent even greater feed consumption.

Clinton P. Anderson, newly-appointed secretary of agriculture and war food administrator, attended one of the sessions and assured the group that their recommendations would be given full consideration in Washington.

Following reports from various members of the council it was decided that a joint committee from the survey group and the council should draw up specific recommendations for meeting the situation and present the plan to Mr. Anderson.



class 20100
column type
portable
bag closer

For use in smaller plants and for utility duty in larger plants, the Union Special Class 20100 portable machine has earned widespread popularity. This machine is equipped with a floating bag carrier which returns automatically to its loading position when closed bag is removed. The carrier and the sewing head are both adjustable vertically. The easy portability of the unit, a particularly practical and efficient piece of equipment, makes possible the carrying on of bag closing operations in different sections of a plant. Styles are available for closing light to medium weight bags using Union Special sewing heads in Class 14500, and for closing medium to heavy weight bags using Class 80600 sewing heads. Write for Bulletin 200 giving full information on this and other bag closing equipment.

UNION SPECIAL MACHINE COMPANY,
476 North Franklin Street, Chicago 10, Illinois.

UNION SPECIAL BAG CLOSING MACHINES

BAGGING AID



The Gibbons bag holder which greatly simplifies bagging operations on a platform scale is now being stocked by Seedburo Equipment Co. When mounted on a platform scale it saves much time in handling . . . the bag is filled and weighed, then removed from the scale. With other type bag holders, it is necessary to fill the bag before putting it on the scale for weighing. Further information regarding the Gibbons bag holder is available from Seedburo Equipment Company, 223 West Jackson Boulevard, Chicago 6, Illinois.

Market Street

We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here.

Rate: 5c per word per issue.
Minimum insertion \$1.00.

UNIVERSAL 8 pc. Tool Set, \$14.85—10 pc., \$19.85; Wrench Set, 6 pc. box end, \$7.85—Open end, \$9.85; Combination Box and Open 8-wrench set, \$14.95; Midget $\frac{1}{4}$ " or $\frac{3}{8}$ " Socket Set in case, \$19.85; Standard $\frac{1}{2}$ " 15-pc. Socket Set & Case, \$29.85; Tractor $\frac{3}{4}$ " 14-pc. Socket Set & Case, \$49.85. Immediate shipment. Clip ad. Mail check now! Universal Tool Co., 1527 Grand, SBD9, Kansas City, Mo.

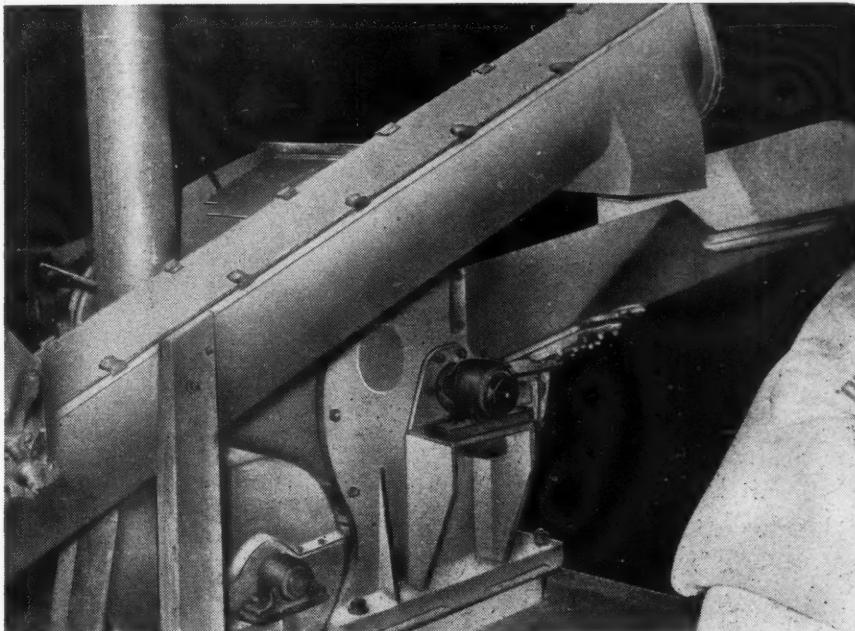
SOY RECIPES for commercial and household use, technical data, samples requested by nutrition specialist and experimenter, with view to future business. Hone, 114, Lichfield Road, Shelsfield, Walsall, England.

FOR SALE — Used Steel Storage Tanks, 8,000, 10,000, 12,000, 18,000 gal. and other sizes. Stanhope, Rosemont, Penna.

WANTED to hear from owner of farm for sale for fall delivery. Wm. Holly, Baldwin, Wis.

AUGUST, 1945

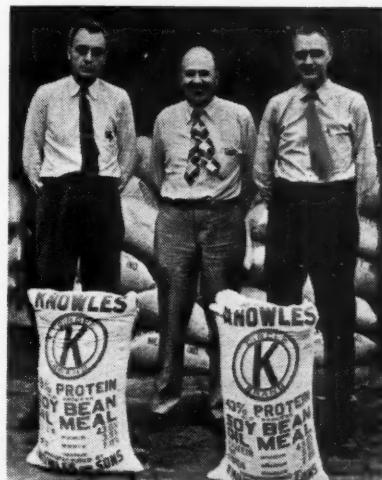
Soy Bean Processing Plants Regardless of Size Look to PRATER for SERVICE



KNOWLES & SONS, Mellot, Indiana, is one of the moderate sized plants that has been outstandingly successful in the processing of Soybeans.

This firm called on Prater Service for engineering aid in laying out their plant to secure the most efficient operation for meal grinding.

A Prater Pulverizer is the central unit in the meal grinding section and the entire layout is arranged for present efficiency and future expansion. Shown at right are Messrs. Milford and Reed L. Knowles, the operators.



Regardless of the size of your plant or the nature of your problem Prater Service is equipped to handle it.

PRATER PULVERIZER COMPANY

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DELSOY TOPPING — AN

All-Vegetable Cream

Delsoy Topping is the new brand name for Devonshire Topping, all-vegetable whipping product. And the name of the manufacturing firm has been changed from Devonshire Topping, Inc., to Delsoy Products, Inc., Herbert Marshall Taylor, the manufacturer, has announced. Headquarters are in the Graybar Building, New York City.

Delsoy Topping has had an interesting

history, having encountered the usual pitfalls of a new food product that is bedeviled with bureaucratic interference and the opposition of powerful economic interests.

Topping is the name bakers have for the fluffy white dressing they use on the top of pies. Whipped cream is the traditional topping.

Taylor began over a decade ago by manufacturing and selling a machine with which bakers could whip up their own cream from mixtures of powdered milk and butter, an operation saving them a dollar a gallon.

When, as he says, the Chicago creameries put him out of business, he moved to Detroit and began to manufacture the topping to sell through retail stores. The product was made from a milk base and a vegetable oil until WFA cut the firm's milk allotment. Then Taylor switched to a soy milk base and the

topping became an all-vegetable product. According to the *New York Herald Tribune* it whips to two and one-half times its original volume and looks, tastes and acts like whipped cream.

Taylor claims 1,500 independent dealers for Delsoy Topping in Detroit. He has added a plant in Dearborn to the one in Detroit, and announces that he plans to manufacture and sell soy milk, soy chocolate milk, soy butter, soy cream cheese and ice cream. This spring the topping was introduced through retail stores in New York City.

— s b d —

OIL ARTICLE

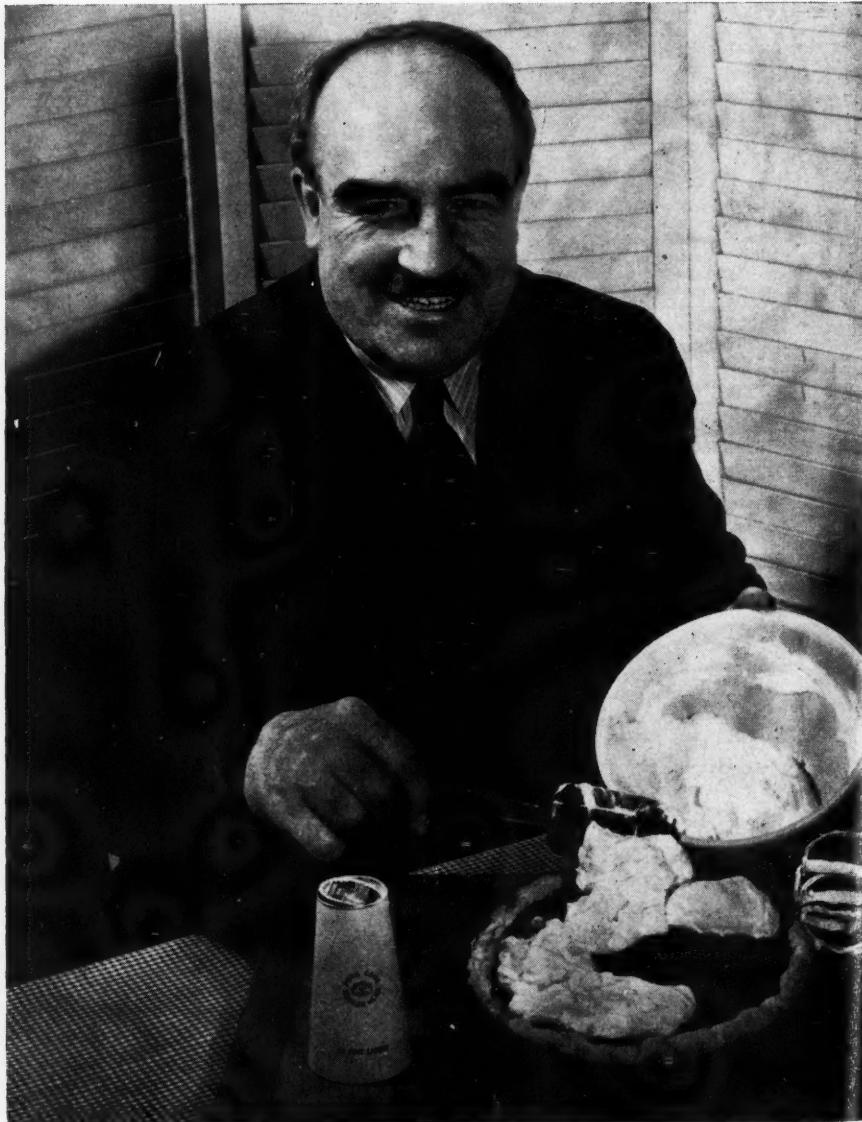
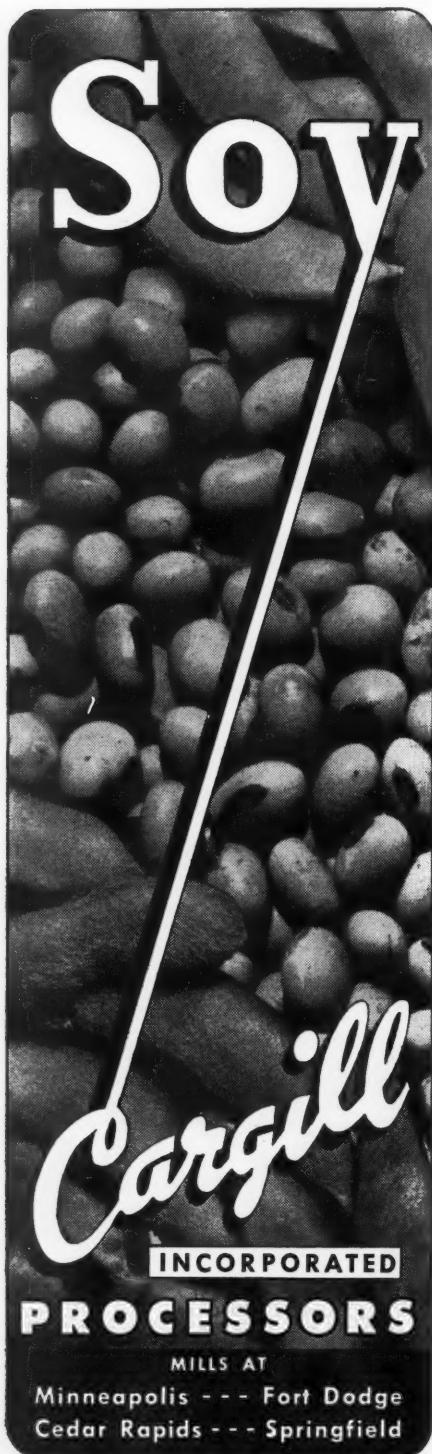
To the Editor:

If they are available would like very much to have a dozen copies of the June issue of the *Soybean Digest*. The article on Soybean Oils (Alderks) is of a great deal of interest.

E. WATSON MADDOX
Assistant Agronomist
Central Soya Co., Inc.
Decatur, Ind.

Herbert Marshall Taylor and Delsoy Topping.

—New York Herald-Tribune

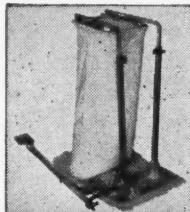


Easy to Make Moisture Tests with a *Steinlite*

Almost anyone can learn to operate the Steinlite in a short time. No special education or training necessary. About all one does is (1) weigh out a sample, (2) pour it into the Steinlite hopper, (3) read a meter dial, and (4) compare the reading with a chart showing percentage of moisture.



The Steinlite is ACCURATE . . . calibrated against official oven methods. Built by a pioneer organization of radio engineers. When used by an experienced operator it is "the one minute moisture tester." More in use than all other electric moisture testers combined. Sold on a 10-day free trial basis. No money down. \$275.00 F.O.B. Atchison, Kans. Write for catalog No. 146.



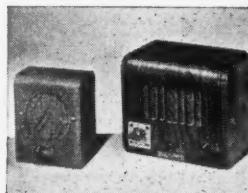
**GIBBONS
BAG HOLDER**

No. 470 — The Gibbons Bag Holder can be installed on a platform scale or on the floor. Its distinguishing feature is that both hands are free to attach and remove the bag. Equipped with foot release. Adjustable for any width and height bag. All castings are aluminum for lightness. Particularly useful when installed on a platform scale to use in connection with bagging operations. \$20.00 F.O.B. Waukegan, Illinois.



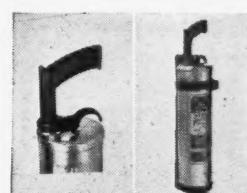
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The No. 66 Dupor Respirator provides economical low cost protection where dust hazards prevail. Has two large felt filter pads 5/16 inch thick, securing double capacity and a clear entrance aperture of 7 1/2 square inches. Made of soft, high grade rubber and weighs only 4 oz. Price, each \$1.65. Many other types of respirators available. Write for information.



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The Call-A-Phone brings every man in your plant within talking distance. You can contact one or up to five persons while they remain at their work. Personnel can contact you. It is easy to install and economical to operate. Master station, \$34.00. Sub-stations, each \$12.50. Special control permits adjustment of volume. Begin with one sub-station, add others as needed.



**"PISTOL-GRIP"
FIRE EXTINGUISHER**

Shoots about thirty feet straight and continuously. Turn handle a half turn either way, pump a few strokes and pull the Trigger . . . not necessary to pump while shooting and pressure can be stored up for short periods. The liquid contains no water, alkali, or acid, and will not freeze. It is a non-conductor of electricity, and will not harm delicate silks, high polishes, etc. Price—1 Qt. \$9.50, 1 1/2 Qt. \$11.50. Refill liquid \$.95 Qt., \$3.15 Gal.

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★ RESEARCH ★

LEGUME SILAGE FOR DAIRY COWS, by S. A. Hinton, C. E. Wylie and G. A. Shuey. Circular No. 89, University of Tennessee Agricultural Experiment Station, Knoxville.

In experiments on the making of si-

lage from various legumes, and on the use of different preservatives, two 10 ton silos at the dairy barn were filled in the fall; one with a mixture of corn and soybeans, and the other with soybeans mixed with phosphoric acid. The silos were filled September 30 and October 1. In silo No. 1 the corn and soybeans were mixed at the cutter in the proportion of two parts of soybeans to one part of corn, as nearly as possible. The silo when full contained 12,600 pounds of soybeans and 6,400 pounds of corn.

The corn was well matured—well past the glaze stage, with some of the bottom leaves drying up. Ears were not removed. The soybeans were in a late-bloom stage and were very leafy. A number of pods had formed on the soybeans, but these were not full at time of cutting. The soybeans were cut, raked, and loaded as quickly as possible and brought to the silo. No adjustment of moisture was made for either silo.

The soybeans in silo No. 2 came from the same field as those in No. 1, but were preserved with 18 pounds of 70 percent phosphoric acid per ton of green material. When the silo was opened December 6, the preservation was good, and there was

practically no mold. The silage in both silos was of splendid quality. It was fed to dairy cows, and proved to be very palatable.

In order to compare the feeding value of these two silages with corn silage, three groups of four cows each were selected from the University dairy herd. The groups were as nearly equal as possible in weight, stage of lactation, production, and breed. Each cow was fed 10 pounds per day of concentrates, consisting of equal parts of corn, oats, wheat bran, and cottonseed meal; and approximately 10 pounds of alfalfa hay and 30 pounds of silage. Group 1 was fed corn silage. Group 2 was fed the mixture of corn and soybean silage. Group 3 was fed soybean silage preserved with phosphoric acid.

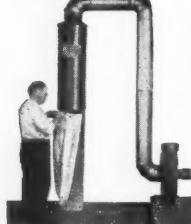
The cows in all three groups were in splendid condition at the end of the feeding trial. Good production was secured from all groups. There was no significant difference in the production of the cows in the corn silage and the corn-soybean silage groups.

When plowing for wheat cannot be done before the middle of August, the practice of disking the stubble in July has proved advantageous, according to D. C. Wimer, professor of soil physics. After a cultivated crop such as corn or potatoes, or after soybeans or cowpeas, the ground should be disk-harrowed instead of plowed.



We manufacture 6 sizes of Vertical Feed Mixers $\frac{1}{2}$ to 5 tons capacity.

Model "L" Hammermill. A sturdy machine embodying many features. 40 to 60 H.P. Heavy duty Model "M" Hammermill, 50 to 100 H.P.



Kelly-Duplex Bag Cleaner. A time, money and bag saver . . . needed in every mill.

Having equipped hundreds of feed mills and elevators throughout the country—our service to the grain handler and processor represents more than just an effort to sell a particular machine. Our engineers analyze your problem from every angle to help you operate more efficiently and at less cost, also, to enable you to realize a profit and render better service. You can depend on Kelly-Duplex equipment in every particular. If your mill or elevator equipment needs repairs or modernization, we will be glad to furnish suggestions and estimates without obligation.

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60 Years'
Experience Backs
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The Duplex Mill and Mfg. Co.
Springfield, Ohio

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DETROIT	PITTSBURGH	SALT LAKE CITY	WINTER HAVEN, FLA.
MEMPHIS	KANSAS CITY	OKLAHOMA CITY	WICHITA, KAN.
BUFFALO	MINNEAPOLIS	PORTLAND, ORE.	

PUBLICATIONS

SOYBEANS, HARVESTED FOR BEANS, acreage, yield and production 1943 and 1944, by counties for 18 principal states. 37 pages. Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C.

These county estimates, assembled by the crop reporting board, are a breakdown of the official state estimates and were prepared by the agricultural statisticians in the respective states.

Though soybean production is estimated in 30 states, the 1944 production in the 18 states shown comprises more than 99 percent of the total U. S. production.

Similar estimates from 1939 through 1942 for the most of these states are available in previous releases.

States covered by this report are Illinois, Iowa, Ohio, Indiana, Missouri, Minnesota, Arkansas, Kansas, North Carolina, Mississippi, Michigan, Virginia, Wisconsin, Tennessee, Nebraska, Kentucky, Delaware, and Maryland.

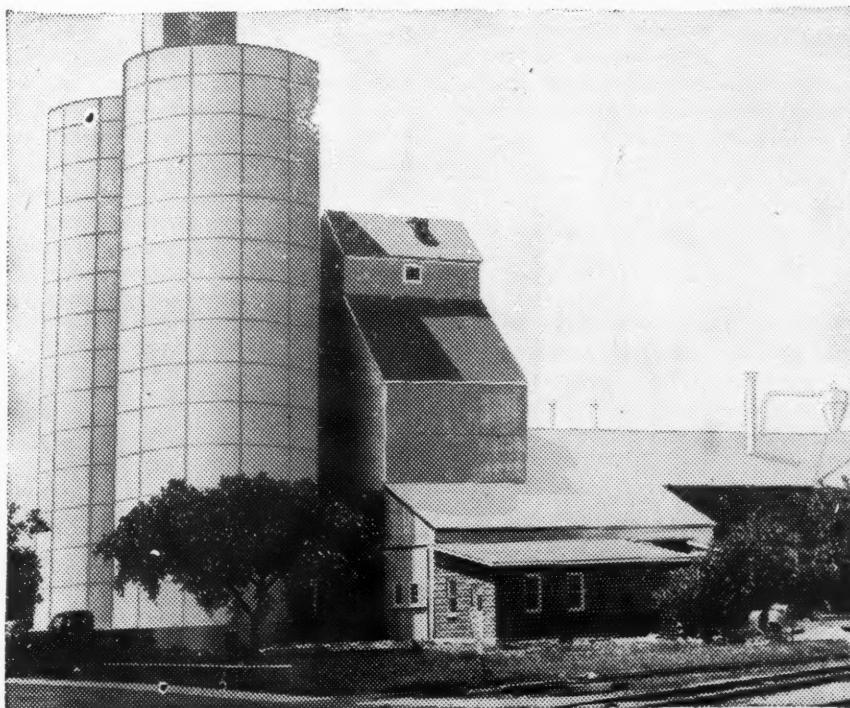
— s b d —

A total of 26 soil conservation districts have been established in Indiana. Nearly 5 million acres in the state are now included in soil conservation service areas.

Coffeyville, Kans., Plant in Operation

This Coffeyville, Kans., soybean plant of Consumers Cooperative Association went into operation July 1. It was built adjacent to the refining properties of C. C. A. Manager E. L. McIntosh estimates capacity at 2,200 gallons of oil and 45 tons of oil meal daily.

—Cooperative Consumer



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WASHINGTON Digest

Protein Situation

The Department of Agriculture's crop goals committee expects to have a recommendation on 1946 soybean acreage to submit to Secretary of Agriculture Clinton Anderson by Sept. 15.

Current, unofficial thinking on next year's acreage indicates the committee will ask for about the same total as this year, or as one official put it, "about as much as we can get."

With the current squeeze on protein feeds, the Department of Agriculture is getting requests for reinstatement of the protein meal set-aside order, which was abandoned last winter in favor of voluntary distribution.

The requests are coming mainly from dealers and feed mixers in Oregon, California, Kentucky, Tennessee, Alabama, Texas and Oklahoma.

However, feed officials are reluctant to restore the set-aside. There is no indication that it will be done unless unexpected developments should tighten up supplies more than they now are.

USDA hopes to get through the tight August-September period by voluntary distribution methods, and by fall it's hoped supplies will be somewhat improved.

The Bureau of Agricultural Economics says indications are for somewhat smaller supplies of high protein feeds during the 1945-46 marketing year than during 1944-45. BAE reports:

"The acreage of cotton under cultivation on July 1 was almost 10 percent smaller than in 1944. The acreage of soybeans grown alone for all purposes this year was indicated on July 1 to be about 2 percent less than in 1944, and the acreage of peanuts grown alone for all purposes was down 7 percent.

"Partly offsetting these smaller acreages was an indicated 38 percent increase in flaxseed acreage. Also increased imports of copra may be forthcoming during the next year, which would provide larger supplies of copra cake and meal than for at least the past 2 years."

Secretary Anderson is trying to speed up efforts to bring the Philippines back into oil production. Reports have been circulating here that many of the boats coming home from the islands have been loaded so light "they can't keep their propellers in the water." Anderson is trying to get the Army to load returning boats with copra.

Payne to Europe

Donald S. Payne, former head of the Soya Products Section of the old

War Food Administration, has left the Department of Agriculture and is going to Europe for the United Nations Relief and Rehabilitation Administration.

Payne's mission is that of a goodwill ambassador for new American foods, especially the new, high-protein vegetable



DONALD S. PAYNE

product foods which might be used in Europe to help fill the wide gap in meats and dairy products.

This emphasizes the use of soybean products, such as soy flour, soups, spaghetti, etc., which have been developed in this country in recent years.

Payne's main job is to see what can be done about getting the receivers of UNRRA relief to use these and other new American food products.

Payne is one of the leading American exponents of the nutritional value of soy food products and their ultimate wide acceptance. As much as any other official in Government, he has led the way in recent years in promoting development of soy food products, improvement in palatability and merchandising.

Payne will have ample room in Europe to apply his American experience and faith in soy products. Unofficial and official observers returning from Europe maintain that people in many parts of the liberated countries face starvation this winter unless greater supplies are obtained, and transportation is made available to distribute evenly what food there is.

By PORTER M. HEDGE

Washington Correspondent for
The Soybean Digest

Market-wise, Payne's mission may be significant. If he succeeds, he may be instrumental in creating a European demand for soy products that would carry over into the postwar period.

Will Farm By Plane

Rural America airborne!
This is the picture air transport enthusiasts are

beginning to paint of the postwar world when the nation again settles down to peace and the airplane comes fully of age.

Transportation always has been a vital link in agricultural development. It was the railroads which opened up the west in the 19th century. It was the automobile that tied the farm and city together in the early part of the 20th.

Will it be the airplane that brings the world's markets to the farmer's front door in the last half of this century?

If you listen to the air enthusiasts and credit half of what you see and hear about the coming age of air power, you begin to suspect some truth is in the idea.

Among the most obvious and ardent advocates of the potentialities to farmers of postwar air transport are the public relations men of the Air Transport Association located in Washington.

While it may be a long time, if ever, before sky trains replace the steamboat, truck and locomotive, it is worthwhile taking a look at some of the most recent developments, and to speculate on their possibilities.

Air Transport Association cites three developments to support its claim that aviation's role in the future of rural America is charged with large possibilities:

(1) It reports a USDA estimate that at least 3,000 surplus planes may become air trucks to transport farm produce.

(2) It notes a survey indicating that about 60 percent of personal planes sold in the immediate postwar period will go to residents of rural areas.

(3) It cites the Civil Aeronautics Authority as saying that pilot openings in aerial agriculture are likely to overshadow the opportunities offered war flyers as airline pilots or civilian instructors.

These are a few of the ordinary uses, most of them already successfully tried

out, to which rural air transport may be put in the postwar period.

Airborne shipments of perishable food-stuffs from coast to coast, and possibly beyond our borders; transportation of baby chicks; emergency dispatch of doctors and medicines to the sick; carrying the sick or injured to hospitals in cases of emergency; flying grain and feeds to snow or flood-bound farms; spreading germicides; dusting, inspecting and checking of crops; fertilizing land; seeding pastures; shooting animal pests and checking on cattle, sheep and fences.

"Bombing" of crop pests has postwar possibilities. Oklahoma A. & M. College has a "Flying Farmers Day," and when last held 18 farmer-flown planes came in, two of them piloted by farm wives.

ATA visualizes as a postwar opportunity for supplementing farm income by conversion of a few acres into a flying field and offering passing flyers the same type of service motorists now get at highway service stations.

In Illinois, a small plane was used to seed to grass 1,200 acres of coal strip mine land, too rough for a mechanical seeder. The job was done in 26 hours at a cost of \$3.21 an acre. A cost estimate on the same job done by hand was \$6 an acre.

Sausage Ruling The U. S. Department of Agriculture's meat inspection division has issued a new ruling which permits use of soy flour as a binder in sausage on the same basis as other so-called "binders"—cereals, dried milk, etc.—which have been used in the past.

Until the ruling became effective last month, soy flour was not accepted by the inspection division as a permissible ingredient of sausage.

The action represents a victory for the soy flour industry, which has advocated the move for a long time, and it opens one more gateway to the fuller use of soybean products.

The ruling permits use of up to 3½ percent of soy flour and other binder ingredients, individually or collectively, but the total may not exceed more than this amount.

A. R. Miller, chief of the meat inspection division, lists these as the reasons use of soy flour in sausage is now acceptable:

Since soy flour in recent years has become more widely used, it has acquired a background of consumer usage, and a "consumer expectancy" has been built up.

Soy flour already was in common use in products not coming under USDA inspection.

A showing has been made that the functional use of soy flour is equal or similar to that of other binders used in sausage.

The problem of inadequate laboratory

control in making tests of the product containing soy flour has been overcome.

Oil Use in Margarine

Increased use of soybean oil in manufacture of margarine is reported in a recent study of the Commerce Department.

Soybean oil represented 44.4 percent of the total fats and oils used in making margarine last year. Cottonseed oil ranked first with 45.3 percent. The remainder was made up of peanut, corn and linseed oils and animal fats.

Soybean oil accounted for only 34 percent of margarine manufactured in 1940, and 39.8 in 1943.

Total output of crude soybean oil in 1944 came to 1,245,873,000 pounds. The five ranking states were: Illinois, 451,344,

000; Ohio, 150,412,000; Iowa, 147,523,000; Indiana, 110,249,000; and Texas, 68,567,000.

THINKS SOYBEANS DRAW LIGHTNING

To the Editor:

Please discontinue my subscription as 6,000 bu. of soybeans that I raised on my farms in and near Princeton were stored and tested for seed by Rutgers University who made a written report of 92% germination were destroyed together with the finest barn in Mercer county when at midnight in May 1943 it was struck by lightning which I think was attracted by the soybeans as the lightning rods and a very high locust tree near it were not hit.

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Princeton, N. J.

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In The MARKETS

● SOYBEAN INSPECTIONS. Inspected receipts of soybeans dropped sharply in June to a total of 3,642 cars, compared with 5,953 cars in May and 6,588 cars in April, according to inspectors' reports to the Grain Products Branch of the Office of Marketing Services. Inspected receipts October through June this season were 78,183 cars, approximately the same as for the same period last season when 78,864 cars were inspected.

The quantity of the soybeans inspected in June was somewhat below that for the preceding month, 87 percent grading No. 2 or better compared with 92 percent in May.

Inspections of soybeans in June included the equivalent of 95 cars inspected as cargo lots, and truck receipts equivalent to about 18 cars.

● SOYBEAN STOCKS. War Food Administration commercial grain stock report.

U. S. Soybeans in Store and Afloat at Domestic Markets (1,000 bu.)

	July 10	July 17	July 24	July 31
Atlantic Coast	133	134	145	135
Gulf Coast	980	1,029	717	628
Northwestern and Upper Lake				
Lower Lake	581	457	343	273
East Central	2,427	1,575	1,164	1,027
West Central, Southwestern and Western	1,087	852	695	545
Pacific Coast				
Total current week	5,208	4,047	3,064	2,698
Total year ago	4,115	3,463	3,095	2,727
Total North American Commercial Soybean Stocks (1,000 bu.)				
Current week	5,208	4,047	3,064	2,698
Year ago	4,211	3,559	3,366	2,998

● JUNE FOOD PURCHASES. WFA's report of agricultural commodities purchased during June for lend-lease, territorial emergency, Red Cross and other purposes.

QUANTITY

Commodity (Lbs.)	June	June 30, 1945
Margarine	8,850,000	55,156,860
Shortening		2,927,488
Soybean oil	1,200,000	4,976,181
Soybean oil meal		21,300,000
Soybeans		230,742,080
La Choy sauce (pints)		50,000

● STANDARD SHORTENING SHIPMENTS. By members of Institute of Shortening Mfgs., Inc. (Pounds).

July 7	5,489,053
July 14	8,072,841
July 21	7,930,278
July 28	8,299,284

SOYBEAN DIGEST